

November 26, 2012

**Via Certified Mail Return Receipt Requested
Certified Receipt 7007 0220 0004 2199 4043**

Mr. Jerry Saunders
USEPA Region 6
1445 Ross Avenue
Suite 1200
Mail Code: 6EN
Dallas, TX 75202-2733

Re: Data from the second of four sampling events for private water wells in Parker County, Texas

Dear Mr. Saunders:

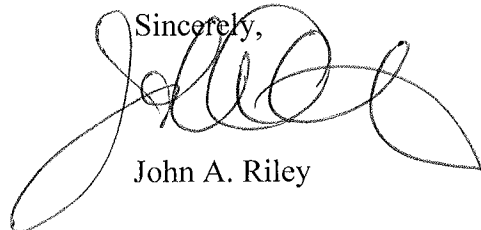
As explained more fully in its March 30, 2012 letter to the United States Environmental Protection Agency ("EPA"), Range Production Company and Range Resources Corporation (although separate legal entities for convenience are collectively referred to as "Range") committed to sample certain private water wells located in southern Parker County, Texas and conduct certain specified analyses in four sampling events approximately three months apart subject to securing the well owners' consent.

Range has completed the second of these events and includes with this letter a compact disc containing the analytical data. In this second sampling event, Range consultants obtained and analyzed samples from the 14 water wells identified in Table 1 (see the enclosed compact disc). As noted in Range's letter to EPA dated August 17, 2012, Range informed well owners that Range would not sample their wells after the first event if Range did not receive written consent. Five well owners have not provided written consent and, consequently, Range has discontinued sampling of those wells. In one instance where the well owner did provide written consent, the well pumping system was not working and attempts to contact the well owner were unsuccessful; therefore, the well was not sampled in this round of sampling.

Please do not hesitate to contact me if you have any questions or require further information regarding this matter.

BRACEWELL
& GIULIANI

Mr. Jerry Saunders
USEPA Region 6
November 26, 2012
Page 2

Sincerely,

John A. Riley

Enclosure as indicated

c w/encl.: Mr. David P. Poole
General Counsel
Range Production Company

Table 1
Quarterly Residential Well Sampling Project
Parker County, Texas
Second Quarterly Sampling Event - August 2012
Summary of Samples Collected

Water Well Number (WW#)	Property Owner	Sample Collection Date	Water Condition	Sample Field Identification	Comments
WW 1	Rodney & Geraldine Wells	08/17/12	Un-treated	WWW01-WEL-081712	
WW 2	Michelle (Shelly) Perdue	08/17/12	Un-treated	WWW02-PER-081712	
WW 6	Amanda Thompson	08/17/12	Un-treated	WWW06-THO-081712	
WW 7	Jeff Merryman	08/18/12	Un-treated	WWW07-MER-081812	
WW 10	Devyn Hayley	08/28/12	Treated	WWW10-HAY-082812	Collected at tank inlet; therefore, sample for analysis at Isotech cannot be collected
WW 11	Harry & Margaret Anderson	08/17/12	Un-treated	WWW11-AND-081712	
WW 13	Thomas (Tom) & Elizabeth Struths	08/18/12	Un-treated	WWW13-STR-081812 DUP-081812	Duplicate collected (Accutest)
WW 14A	Stephen & Carol Hurst	08/18/12	Un-treated	WWW14A-HUR-081812	Volume for MS/MSD collected (Accutest)
WW 15	Stephen & Carol Hurst	08/18/12	Un-treated	WWW15-HUR-081812	
WW 18	Thomas (Tom) & Elizabeth Struths	08/28/12	Treated	WWW18-STR-082812	Collected at tank inlet; therefore, sample for analysis at Isotech cannot be collected
WW 19	Joseph (Joe) & Rebecca Williams	08/19/12	Un-treated	WWW19-WIL-081912	
WW 20	Dennis Huffman	08/19/12	Un-treated	WWW20-HUF-081912	
WW 21	Kirk & Brenda Van Newkirk	Attempted sampling on 8/18/12 but pumping system was not working, and attempts made in contacting the landowner were unsuccessful; therefore, the well was not sampled.			
WW 24	Pamela Smith	08/17/12	Un-treated	WWW24-SMI-081712	
WW 25	Jeff Mathews	08/17/12	Un-treated	WWW25-MAT-081712	
	Trip Blank	08/19/12		TRIPBLANK-081912-1	
	Trip Blank	08/19/12		TRIPBLANK-081912-2	
	Trip Blank	08/28/12		TRIPBLANK-082812-3	
	Equipment Blank	08/19/12		EQUIPBLANK-081912	



08/31/12

Technical Report for

EarthCon Consultants

Quarterly Well Sampling, Parker County, Texas

2nd Quarter / WW11-AND

Accutest Job Number: TC14968

Sampling Date: 08/17/12

Report to:

EarthCon Consultants
4800 Sugar Grove Suite 420
Stafford, TX 77477
gfloreslovo@earthcon.com; djackson@jacksonsjoberg.com;
mcpatton@rangeresources.com; escott@earthcon.com
ATTN: Gabriela Floreslovo

Total number of pages in report: **25**



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.

Richard Rodriguez
Laboratory Director

Client Service contact: Elessa Sommers 713-271-4700

Certifications: TX (T104704220-12-8) AR (11-028-0) AZ (AZ0769) FL (E87628) KS (E-10366)
LA (85695/04004) OK (211-035)

This report shall not be reproduced, except in its entirety, without the written approval of Accutest Laboratories.
Test results relate only to samples analyzed.

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Sample Summary

EarthCon Consultants

Job No: TC14968

Quarterly Well Sampling, Parker County, Texas
Project No: 2nd Quarter / WW11-AND

Sample Number	Collected Date	Time By	Received	Matrix Code Type	Client Sample ID
TC14968-1	08/17/12	11:50	08/21/12	AQ Ground Water	WW11-AND-081712



SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: EarthCon Consultants

Job No TC14968

Site: Quarterly Well Sampling, Parker County, Texas

Report Date 8/31/2012 6:54:12 PM

1 Sample was collected on 08/17/2012 and received intact at Accutest on 08/21/2012 and properly preserved in 1 cooler at 2.4 Deg C. The sample received an Accutest job number of TC14968. A listing of the Laboratory Sample ID, Client Sample ID and date of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

Volatiles by GCMS By Method SW846 8260B

Matrix AQ	Batch ID: VZ3732
------------------	-------------------------

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC14970-1MS, TC14970-1MSD were used as the QC samples indicated.

Volatiles by GC By Method RSKSOP-147/175

Matrix AQ	Batch ID: GSS178
------------------	-------------------------

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC14970-1DUP, TC14970-1MS were used as the QC samples indicated.
- Matrix Spike Recovery for Methane is outside control limits. Outside control limits due to high level in sample relative to spike amount.

Accutest Laboratories Gulf Coast (ALGC) certifies that this report meets the project requirements for analytical data produced for the samples as received at ALGC and as stated on the COC. ALGC certifies that the data meets the Data Quality Objectives for precision, accuracy and completeness as specified in the ALGC Quality Manual except as noted above. This report is to be used in its entirety. ALGC is not responsible for any assumptions of data quality if partial data packages are used

Summary of Hits

Page 1 of 1

Job Number: TC14968
Account: EarthCon Consultants
Project: Quarterly Well Sampling, Parker County, Texas
Collected: 08/17/12



Lab Sample ID Analyte	Client Sample ID	Result/ Qual	ML	SDL	Units	Method
TC14968-1	WW11-AND-081712					
Methane		0.0504	0.00050	0.00030	mg/l	RSKSOP-147/175
Ethane		0.0022	0.0010	0.00050	mg/l	RSKSOP-147/175

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID: WW11-AND-081712

Lab Sample ID: TC14968-1

Date Sampled: 08/17/12

Matrix: AQ - Ground Water

Date Received: 08/21/12

Method: SW846 8260B

Percent Solids: n/a

Project: Quarterly Well Sampling, Parker County, Texas

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Z028327.D	1	08/24/12	AK	n/a	n/a	VZ3732
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

Purgeable Aromatics

CAS No.	Compound	Result	MQL	SDL	Units	Q
71-43-2	Benzene	0.00025 U	0.0010	0.00025	mg/l	
108-88-3	Toluene	0.00026 U	0.0010	0.00026	mg/l	
100-41-4	Ethylbenzene	0.00025 U	0.0010	0.00025	mg/l	
1330-20-7	Xylene (total)	0.00071 U	0.0030	0.00071	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	102%		79-122%
17060-07-0	1,2-Dichloroethane-D4	92%		75-121%
2037-26-5	Toluene-D8	104%		87-119%
460-00-4	4-Bromofluorobenzene	113%		80-133%

U = Not detected SDL - Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Page 1 of 1

Client Sample ID:	WW11-AND-081712					Date Sampled:	08/17/12
Lab Sample ID:	TC14968-1					Date Received:	08/21/12
Matrix:	AQ - Ground Water					Percent Solids:	n/a
Method:	RSKSOP-147/175						
Project:	Quarterly Well Sampling, Parker County, Texas						

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	SS003638.D	1	08/27/12	LT	n/a	n/a	GSS178
Run #2							

RSK147 Special List

CAS No.	Compound	Result	MQL	SDL	Units	Q
74-82-8	Methane	0.0504	0.00050	0.00030	mg/l	
74-85-1	Ethene	0.00050 U	0.0010	0.00050	mg/l	
74-84-0	Ethane	0.0022	0.0010	0.00050	mg/l	
74-98-6	Propane	0.00075 U	0.0015	0.00075	mg/l	
75-28-5	Isobutane	0.00075 U	0.0015	0.00075	mg/l	
106-97-8	Butane	0.00075 U	0.0015	0.00075	mg/l	

U = Not detected SDL - Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound



Misc. Forms



Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody
- LRC Form

10165 Harwin Dr, Ste 150 Houston, TX 77036
TEL: 713-271-4700 FAX: 713-271-4770
www.acutest.com

[illegible]

TC14968: Chain of Custody
Page 1 of 3



Accutest Laboratories Sample Receipt Summary

Page 1 of 2

Accutest Job Number: TC14968 Client: EARTHCON CONSULTANTS Project: 2ND QUARTERLY
Date / Time Received: 8/21/2012 Delivery Method: FedEx Airbill #'s: 801561645028
No. Coolers: 1 Therm ID: IRGUN5; Temp Adjustment Factor: -0.4;
Cooler Temps (Initial/Adjusted): #1: (2.8/2.4);

Cooler Security

Y or N

- | | | | | | |
|---------------------------|-------------------------------------|--------------------------|-----------------------|-------------------------------------|--------------------------|
| 1. Custody Seals Present: | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 3. COC Present: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Custody Seals Intact: | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 4. Smpl Dates/Time OK | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

Cooler Temperature

Y or N

- | | | |
|------------------------------|-------------------------------------|--------------------------|
| 1. Temp criteria achieved: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Cooler temp verification: | | |
| 3. Cooler media: | Ice (Bag) | |

Quality Control Preservation

Y or N

N/A

WTB STB

- | | | | | | |
|---------------------------------|-------------------------------------|-------------------------------------|--------------------------|-------------------------------------|--------------------------|
| 1. Trip Blank present / cooler: | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Trip Blank listed on COC: | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | |
| 3. Samples preserved properly: | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | |
| 4. VOCs headspace free: | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | |

Sample Integrity - Documentation

Y or N

- | | | |
|--|-------------------------------------|--------------------------|
| 1. Sample labels present on bottles: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Container labeling complete: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 3. Sample container label / COC agree: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

Sample Integrity - Condition

Y or N

- | | | |
|----------------------------------|-------------------------------------|--------------------------|
| 1. Sample recvd within HT: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. All containers accounted for: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 3. Condition of sample: | Intact | |

Sample Integrity - Instructions

Y or N N/A

- | | | | |
|---|-------------------------------------|-------------------------------------|-------------------------------------|
| 1. Analysis requested is clear: | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| 2. Bottles received for unspecified tests | <input type="checkbox"/> | <input checked="" type="checkbox"/> | |
| 3. Sufficient volume recvd for analysis: | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| 4. Compositing instructions clear: | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 5. Filtering instructions clear: | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

Comments

5.1
5

TC14968: Chain of Custody
Page 2 of 3

Sample Receipt Log

Page 2 of 2

Job #: TC13879

Date / Time Received: 8/2/2012 9:50:00 AM

Initials: BG

Client: SPECTRA ENERGY

Cooler #	Sample ID:	Vol	Bot #	Location	Pres	pH	Therm ID	Initial Temp	Therm CF	Corrected Temp
1	TC13879-1	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-1	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-2	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-2	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-3	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-3	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-4	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-4	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-5	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-5	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-6	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-6	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1

 5.1
5

TC14968: Chain of Custody
Page 3 of 3

Appendix A Laboratory Data Package Cover Page

TC14968 This data package consists of

- ☐ This signature page, the laboratory review checklist, and the following reportable data:
- ☐ R1 Field chain-of-custody documentation;
- ☐ R2 Sample identification cross-reference;
- ☐ R3 Test reports (analytical data sheets) for each environmental sample that includes:
 - a) Items consistent with NELAC 5.13 or ISO/IEC 17025 Section 5.10
 - b) dilution factors,
 - c) preparation methods,
 - d) cleanup methods, and
 - e) if required for the project, tentatively identified compounds (TICs).
- ☐ R4 Surrogate recovery data including:
 - a) Calculated recovery (%R), and
 - b) The laboratory's surrogate QC limits.
- ☐ R5 Test reports/summary forms for blank samples;
- ☐ R6 Test reports/summary forms for laboratory control samples (LCSs) including:
 - a) LCS spiking amounts,
 - b) Calculated %R for each analyte, and
 - c) The laboratory's LCS QC limits.
- ☐ R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
 - a) Samples associated with the MS/MSD clearly identified,
 - b) MS/MSD spiking amounts,
 - c) Concentration of each MS/MSD analyte measured in the parent and
 - d) Calculated %Rs and relative percent differences (RPDs), and
 - e) The laboratory's MS/MSD QC limits
- ☐ R8 Laboratory analytical duplicate (if applicable) recovery and precision:
 - a) The amount of analyte measured in the duplicate,
 - b) The calculated RPD, and
 - c) The laboratory's QC limits for analytical duplicates.
- ☐ R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each
- ☐ R10 Other problems or anomalies.

The Exception Report for each "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Report. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratory in the Laboratory Review Checklist, and no information or data have been knowingly withheld.

Check, if applicable: This laboratory meets an exception under 30 TAC&25.6 and was last inspection by

☐ [X] TCEQ or ☐ _____ on April 2011. Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

QA Manager

Name (Printed)

Signature

Official Title (printed)

Date

Richard Rodriguez



Laboratory Director

8/29/2012

LABORATORY REVIEW CHECKLIST: REPORTABLE DATA									
Laboratory Name:		Accutest Gulf Coast		LRC Date:		8/29/2012			
Project Name:		Quarterly Well Sampling, Parker County, Texas		Laboratory Project Number:		TC14968			
Reviewer Name:		Anita Patel		Prep Batch Number(s):		GSS178, VZ3732			
# ¹	A ²	DESCRIPTION				YES	NO	NA ³	NR ⁴ ER # ⁵
R1	OI	CHAIN-OF-CUSTODY (C-O-C):							
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?				X			
		Were all departures from standard conditions described in an exception report?				X			
R2	OI	Sample and quality control (QC) identification							
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?				X			
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?				X			
R3	OI	Test reports							
		Were samples prepared and analyzed within holding times?				X			
		Other than those results <MQL, were all other raw values bracketed by calibration standards?				X			
		Were calculations checked by a peer or supervisor?				X			
		Were all analyte identifications checked by a peer or supervisor?				X			
		Were sample detection limits reported for all analytes not detected?				X			
		Were all results for soil and sediment samples reported on a dry weight basis?						X	
		Were % moisture (or solids) reported for all soil and sediment samples?						X	
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW846 Method 5035?						X	
		If required for the project, are TIC's reported?						X	
R4	O	Surrogate recovery data							
		Were surrogates added prior to extraction?				X			
		Were surrogate percent recoveries in all samples within the laboratory QC limits?				X			
R5	OI	Test reports/summary forms for blank samples							
		Were appropriate type(s) of blanks analyzed?				X			
		Were blanks analyzed at the appropriate frequency?				X			
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?				X			
		Were blank concentrations <MQL?				X			
R6	OI	Laboratory control samples (LCS):							
		Were all COCs included in the LCS?				X			
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?				X			
		Were LCSs analyzed at required frequency?				X			
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?				X			
		Does the detectability check sample data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?				X			5
		Was the LCSD RPD within QC limits?						X	
R7	OI	Matrix spike (MS) and matrix spike duplicate (MSD) data							
		Were the project/method specified analytes included in the MS and MSD?				X			
		Were MS/MSD analyzed at the appropriate frequency?				X			
		Were MS (and MSD, if applicable) %Rs within the laboratory QC Limits?					X		4
		Were the MS/MSD RPDs within laboratory QC limits?				X			
R8	OI	Analytical duplicate data							
		Were appropriate analytical duplicates analyzed for each matrix?				X			
		Were analytical duplicates analyzed at the appropriate frequency?				X			
		Were RPDs or relative standard deviations within the laboratory QC limits?				X			
R9	OI	Method quantitation limits (MQLs):							
		Are the MQLs for each method analyte included in the laboratory data package?				X			
		Do the MQLs correspond to the concentration of the lowest non-zero calibration				X			
		Are unadjusted MQLs and DCs included in the laboratory data package?					X		2
R10	OI	Other problems/anomalies							
		Are all known problems/anomalies/special conditions noted in this LRC and ER?				X			
		Was applicable and available technology used to lower the SDL to minimize the				X			
		Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices, and methods associated with this laboratory data package?				X			3

Laboratory Name:		Accutest Gulf Coast	LRC Date:		8/29/2012	
Project Name:		Quarterly Well Sampling, Parker	Laboratory Project Number:		TC14968	
Reviewer Name:		Anita Patel	Prep Batch Number(s):		GSS178, VZ3732	
# ¹	A ²	DESCRIPTION	YES	NO	NA ³	NR ⁴ ER # ⁵
S1	OI	Initial calibration (ICAL)				
		Were response factors and/or relative response factors for each analyte within QC limits?	X			
		Were percent RSDs or correlation coefficient criteria met?	X			
		Was the number of standards recommended in the method used for all analytes?	X			
		Were all points generated between the lowest and highest standard used to calculate the curve?	X			
		Are ICAL data available for all instruments used?	X			
		Has the initial calibration curve been verified using an appropriate second source standard?	X			
S2	OI	Initial and continuing calibration verification (ICCV AND CCV) and continuing				
		Was the CCV analyzed at the method-required frequency?	X			
		Were percent differences for each analyte within the method-required QC limits?	X			
		Was the ICAL curve verified for each analyte?	X			
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?			X	
S3	O	Mass spectral tuning				
		Was the appropriate compound for the method used for tuning?	X			
		Were ion abundance data within the method-required QC limits?	X			
S4	O	Internal standards (IS)				
		Were IS area counts and retention times within the method-required QC limits?	X			
S5	OI	Raw data (NELAC Section 5.5.10)				
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X			
		Were data associated with manual integrations flagged on the raw data?	X			
S6	O	Dual column confirmation				
		Did dual column confirmation results meet the method-required QC?			X	
S7	O	Tentatively identified compounds (TICs):				
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X	
S8	I	Interference Check Sample (ICS) results				
		Were percent recoveries within method QC limits?			X	
S9	I	Serial dilutions, post digestion spikes, and method of standard additions				
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			X	
S10	OI	Method detection limit (MDL) studies				
		Was a MDL study performed for each reported analyte?	X			
		Is the MDL either adjusted or supported by the analysis of DCSs?	X			5
S11	OI	Proficiency test reports				
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X			
S12	OI	Standards documentation				
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate source?	X			
S13	OI	Compound/analyte identification procedures				
		Are the procedures for compound/analyte identification documented?	X			
S14	OI	Demonstration of analyst competency (DOC)				
		Was DOC conducted consistent with NELAC Chapter 5?	X			
		Is documentation of the analyst's competency up-to-date and on file?	X			
S15	OI	Verification/validation documentation for methods (NELAC Chapter 5)				
		Are all the methods used to generate the data documented, verified, and validated, where applicable?	X			
S16	OI	Laboratory standard operating procedures (SOPs)				
		Are laboratory SOPs current and on file for each method performed?	X			

LABORATORY REVIEW CHECKLIST (continued): Exception Reports			
Laboratory Name:		Accutest Gulf Coast	LRC Date:
Project Name:		Quarterly Well Sampling, Parker	Laboratory Project Number:
Reviewer Name:		Anita Patel	Prep Batch Number(s):
			TC14968
			GSS178, VZ3732
ER# ¹	Description		
1	For reporting purposes, the MQL is defined in the report as the RL. The unadjusted MQL/RL is reported in the method blank. The SDL is defined in the report as the MDL.		
2	For reporting purposes, the method blank represents the unadjusted MQL. The DCS is on file in the laboratory and is not included in the laboratory data package.		
3	The laboratory is NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices, and methods associated with this laboratory data package for analytes that are listed in the Texas Fields of Accreditation.		
4	All anomalies are discussed in the case narrative.		
5	The Laboratory does not perform DCS analysis for Method RSKSOP-147/175. The components reported are not listed or do not have values in the Texas TRRP PCL tables.		

1ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked on

GC/MS Volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries



Method Blank Summary

Page 1 of 1

Job Number: TC14968

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VZ3732-MB	Z028313.D	1	08/24/12	AK	n/a	n/a	VZ3732

The QC reported here applies to the following samples:

Method: SW846 8260B

TC14968-1

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.25	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.25	ug/l	
108-88-3	Toluene	ND	1.0	0.26	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.71	ug/l	

CAS No.	Surrogate Recoveries	Limits
1868-53-7	Dibromofluoromethane	106% 79-122%
17060-07-0	1,2-Dichloroethane-D4	98% 75-121%
2037-26-5	Toluene-D8	106% 87-119%
460-00-4	4-Bromofluorobenzene	114% 80-133%

6.1.1

6

Blank Spike Summary

Page 1 of 1

Job Number: TC14968

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VZ3732-BS	Z028311.D	1	08/24/12	AK	n/a	n/a	VZ3732

The QC reported here applies to the following samples:

Method: SW846 8260B

TC14968-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2	Benzene	25	23.5	94	76-118
100-41-4	Ethylbenzene	25	23.6	94	75-112
108-88-3	Toluene	25	23.2	93	77-114
1330-20-7	Xylene (total)	75	70.6	94	75-111

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	99%	79-122%
17060-07-0	1,2-Dichloroethane-D4	90%	75-121%
2037-26-5	Toluene-D8	103%	87-119%
460-00-4	4-Bromofluorobenzene	109%	80-133%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: TC14968

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC14970-1MS	Z028320.D	1	08/24/12	AK	n/a	n/a	VZ3732
TC14970-1MSD	Z028321.D	1	08/24/12	AK	n/a	n/a	VZ3732
TC14970-1	Z028319.D	1	08/24/12	AK	n/a	n/a	VZ3732

The QC reported here applies to the following samples:

Method: SW846 8260B

TC14968-1

CAS No.	Compound	TC14970-1 ug/l	Spike Q	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	1.0 U	25	24.5	98	24.2	97	1	76-118/16
100-41-4	Ethylbenzene	1.0 U	25	24.7	99	23.7	95	4	75-112/12
108-88-3	Toluene	1.0 U	25	24.4	98	24.1	96	1	77-114/12
1330-20-7	Xylene (total)	3.0 U	75	74.1	99	72.6	97	2	75-111/12

CAS No.	Surrogate Recoveries	MS	MSD	TC14970-1	Limits
1868-53-7	Dibromofluoromethane	107%	106%	104%	79-122%
17060-07-0	1,2-Dichloroethane-D4	94%	93%	96%	75-121%
2037-26-5	Toluene-D8	107%	107%	107%	87-119%
460-00-4	4-Bromofluorobenzene	113%	113%	113%	80-133%

* = Outside of Control Limits.

GC Volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Page 1 of 1

Job Number: TC14968

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GSS178-MB	SS003617.D	1	08/27/12	LT	n/a	n/a	GSS178

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC14968-1

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	ND	0.50	0.30	ug/l	
74-85-1	Ethene	ND	1.0	0.50	ug/l	
74-84-0	Ethane	ND	1.0	0.50	ug/l	
74-98-6	Propane	ND	1.5	0.75	ug/l	
75-28-5	Isobutane	ND	1.5	0.75	ug/l	
106-97-8	Butane	ND	1.5	0.75	ug/l	

7.1.1

7

Blank Spike Summary

Page 1 of 1

Job Number: TC14968

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GSS178-BS	SS003615.D	1	08/27/12	LT	n/a	n/a	GSS178

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC14968-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
74-82-8	Methane	21.5	20.8	97	70-130
74-85-1	Ethene	57.4	58.2	101	70-130
74-84-0	Ethane	43.3	41.8	97	70-130
74-98-6	Propane	60.6	56.5	93	70-130
75-28-5	Isobutane	72.5	71.1	98	70-130
106-97-8	Butane	76.6	73.7	96	70-130

* = Outside of Control Limits.

Matrix Spike Summary

Page 1 of 1

Job Number: TC14968

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC14970-1MS	SS003620.D	1	08/27/12	LT	n/a	n/a	GSS178
TC14970-1	SS003618.D	1	08/27/12	LT	n/a	n/a	GSS178
TC14970-1	SS003621.D	10	08/27/12	LT	n/a	n/a	GSS178

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC14968-1

CAS No.	Compound	TC14970-1 ug/l	Spike Q	MS ug/l	MS %	Limits
74-82-8	Methane	914 ^b	21.5	600	-337* ^a	60-140
74-85-1	Ethene	1.0 U	57.4	58.8	102	60-140
74-84-0	Ethane	42.3	43.3	71.7	68	60-140
74-98-6	Propane	1.5 U	60.6	56.4	93	60-140
75-28-5	Isobutane	1.5 U	72.5	70.6	97	60-140
106-97-8	Butane	1.5 U	76.6	74.0	97	60-140

(a) Outside control limits due to high level in sample relative to spike amount.

(b) Result is from Run #2.

* = Outside of Control Limits.

Duplicate Summary

Page 1 of 1

Job Number: TC14968

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC14970-1DUP	SS003619.D	1	08/27/12	LT	n/a	n/a	GSS178
TC14970-1	SS003618.D	1	08/27/12	LT	n/a	n/a	GSS178
TC14970-1	SS003621.D	10	08/27/12	LT	n/a	n/a	GSS178

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC14968-1

CAS No.	Compound	TC14970-1 ug/l	DUP Q	DUP ug/l	Q	RPD	Limits
74-82-8	Methane	914 ^a		869	E	26	30
74-85-1	Ethene	1.0 U		ND		nc	30
74-84-0	Ethane	42.3		57.4		30	30
74-98-6	Propane	1.5 U		ND		nc	30
75-28-5	Isobutane	1.5 U		ND		nc	30
106-97-8	Butane	1.5 U		ND		nc	30

(a) Result is from Run #2.

* = Outside of Control Limits.

Lab #: 261138 Job #: 19036
 Sample Name/Number: WW11-AND-081712
 Company: Oil Tracers, LLC
 Date Sampled: 8/17/2012
 Container: Dissolved Gas Bottle
 Field/Site Name: Second Quarter Well Sampling
 Location: Parker County, TX
 Formation/Depth:
 Sampling Point:
 Date Received: 8/22/2012 Date Reported: 9/11/2012

Component	Chemical mol. %	$\delta^{13}\text{C}$ ‰	δD ‰	$\delta^{18}\text{O}$ ‰
Carbon Monoxide -----	nd			
Hydrogen Sulfide -----	na			
Helium -----	na			
Hydrogen -----	nd			
Argon -----	1.07			
Oxygen -----	7.30			
Nitrogen -----	89.88			
Carbon Dioxide -----	0.35			
Methane -----	1.38	-42.3	-112	
Ethane -----	0.0158			
Ethylene -----	nd			
Propane -----	nd			
Propylene -----	nd			
Iso-butane -----	nd			
N-butane -----	nd			
Iso-pentane -----	nd			
N-pentane -----	nd			
Hexanes + -----	nd			

Total BTU/cu.ft. dry @ 60deg F & 14.73psia, calculated: 14

Specific gravity, calculated: 0.978

Remarks:

Analysis is of gas extracted from water by headspace equilibration. Analysis has been corrected for helium added to create headspace. Helium dilution factor = 0.79

*Addition of helium negates the ability to detect native helium and may negate the ability to detect hydrogen.

** Isotopes obtained online via GC-C/P-IRMS

nd = not detected. na = not analyzed. Isotopic composition of hydrogen is relative to VSMOW. Isotopic composition of carbon is relative to VPDB. Isotopic composition of oxygen is relative to VSMOW, except for carbon dioxide which is relative to VPDB. Calculations for BTU and specific gravity per ASTM D3588. Chemical compositions are normalized to 100%. Mol. % is approximately equal to vol. %.



09/06/12

Technical Report for

EarthCon Consultants

Quarterly Well Sampling, Parker County, Texas

2nd Quarter / WW10-HAY

Accutest Job Number: TC15480

Sampling Date: 08/28/12

Report to:

EarthCon Consultants
4800 Sugar Grove Suite 420
Stafford, TX 77477
gfloreslovo@earthcon.com; djackson@jacksonsjoberg.com;
mcpatton@rangeresources.com; escott@earthcon.com
ATTN: Gabriela Floreslovo

Total number of pages in report: **25**



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.

Richard Rodriguez
Laboratory Director

Client Service contact: Elessa Sommers 713-271-4700

Certifications: TX (T104704220-12-8) AR (11-028-0) AZ (AZ0769) FL (E87628) KS (E-10366)
LA (85695/04004) OK (211-035)

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Test results relate only to samples analyzed.

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Sample Summary

EarthCon Consultants

Job No: TC15480

Quarterly Well Sampling, Parker County, Texas
Project No: 2nd Quarter / WW10-HAY

Sample Number	Collected Date	Time By	Received	Matrix Code Type	Client Sample ID
TC15480-1	08/28/12	13:20	08/29/12	AQ Ground Water	WW10-HAY-082812



SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: EarthCon Consultants

Job No TC15480

Site: Quarterly Well Sampling, Parker County, Texas

Report Date 9/6/2012 5:49:20 PM

1 Sample was collected on 08/28/2012 and received intact at Accutest on 08/29/2012 and properly preserved in 1 cooler at 3.3 Deg C. The sample received an Accutest job number of TC15480. A listing of the Laboratory Sample ID, Client Sample ID and date of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

Volatiles by GCMS By Method SW846 8260B

Matrix	AQ	Batch ID:	VC1174
--------	----	-----------	--------

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC15249-4MS, TC15249-4MSD were used as the QC samples indicated.

Volatiles by GC By Method RSKSOP-147/175

Matrix	AQ	Batch ID:	GSS181
--------	----	-----------	--------

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC15494-1MS, TC15494-2DUP were used as the QC samples indicated.

Accutest Laboratories Gulf Coast (ALGC) certifies that this report meets the project requirements for analytical data produced for the samples as received at ALGC and as stated on the COC. ALGC certifies that the data meets the Data Quality Objectives for precision, accuracy and completeness as specified in the ALGC Quality Manual except as noted above. This report is to be used in its entirety. ALGC is not responsible for any assumptions of data quality if partial data packages are used

Summary of Hits

Page 1 of 1

Job Number: TC15480
Account: EarthCon Consultants
Project: Quarterly Well Sampling, Parker County, Texas
Collected: 08/28/12



Lab Sample ID Analyte	Client Sample ID	Result/ Qual	ML	SDL	Units	Method
TC15480-1	WW10-HAY-082812					
Methane		0.309	0.0025	0.0015	mg/l	RSKSOP-147/175
Ethane		0.0413	0.0010	0.00050	mg/l	RSKSOP-147/175
Propane		0.0110	0.0015	0.00075	mg/l	RSKSOP-147/175
Butane		0.0025	0.0015	0.00075	mg/l	RSKSOP-147/175

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID: WW10-HAY-082812

Lab Sample ID: TC15480-1

Date Sampled: 08/28/12

Matrix: AQ - Ground Water

Date Received: 08/29/12

Method: SW846 8260B

Percent Solids: n/a

Project: Quarterly Well Sampling, Parker County, Texas

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	C00255002.D	1	08/31/12	CF	n/a	n/a	VC1174
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

Purgeable Aromatics

CAS No.	Compound	Result	MQL	SDL	Units	Q
71-43-2	Benzene	0.00034 U	0.0010	0.00034	mg/l	
108-88-3	Toluene	0.00033 U	0.0010	0.00033	mg/l	
100-41-4	Ethylbenzene	0.00032 U	0.0010	0.00032	mg/l	
1330-20-7	Xylene (total)	0.00087 U	0.0030	0.00087	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	96%		72-122%
17060-07-0	1,2-Dichloroethane-D4	85%		68-124%
2037-26-5	Toluene-D8	94%		80-119%
460-00-4	4-Bromofluorobenzene	92%		72-126%

U = Not detected SDL - Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Page 1 of 1

Client Sample ID: WW10-HAY-082812

Lab Sample ID: TC15480-1

Date Sampled: 08/28/12

Matrix: AQ - Ground Water

Date Received: 08/29/12

Method: RSKSOP-147/175

Percent Solids: n/a

Project: Quarterly Well Sampling, Parker County, Texas

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	SS003714.D	1	09/04/12	LT	n/a	n/a	GSS181
Run #2	SS003715.D	5	09/04/12	LT	n/a	n/a	GSS181

RSK147 Special List

CAS No.	Compound	Result	MQL	SDL	Units	Q
74-82-8	Methane	0.309 ^a	0.0025	0.0015	mg/l	
74-85-1	Ethene	0.00050 U	0.0010	0.00050	mg/l	
74-84-0	Ethane	0.0413	0.0010	0.00050	mg/l	
74-98-6	Propane	0.0110	0.0015	0.00075	mg/l	
75-28-5	Isobutane	0.00075 U	0.0015	0.00075	mg/l	
106-97-8	Butane	0.0025	0.0015	0.00075	mg/l	

(a) Result is from Run# 2

U = Not detected SDL - Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Misc. Forms

5

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody
- LRC Form



CHAIN OF CUSTODY

PAGE ____ OF ____

10165 Harwin Dr, Ste 150 Houston, TX 77036
TEL: 713-271-4700 FAX: 713-271-4770
www.acctest.com

FED-EX Tracking #		Bottle Order Control #	
Accutest Quote #		Accutest Job # TC15480	
Client / Reporting Information		Project Information	
Company Name EarthCon Consultants, Inc.		Project Name Second Quarterly Well Sampling, Parker County, Texas	
Street Address 4800 Sugar Grove Blvd., Suite 390		Street City State Zip	
City State Zip Stafford TX 77477		Billing Information (if different from Report to) Company Name	
Project Contact Gabriela Floreslovo		Project #	
Phone # 281-201-3513		Street Address	
E-mail		City State Zip	
Fax #		Client Purchase Order #	
Sampler(s) Name(s) JULIE HELFRICH (281)240-5200		Attention:	
Phone #		Project Manager	
Field ID / Point of Collection		Collection	
Date		Time	
Sampled By		Matrix	
# of bottles		Number of preserved bottles	
HCl		NaOH	
HNO3		H2SO4	
H2O2		H2O	
DIWATER		METH	
TSP		NH4OH	
KNO3		KNO2	
OTHER		OTHER	
BTEX 8260B		Bulane, Ethane, Ethene, Isobutane, Methane, Propane by RSK-175	
LAB USE ONLY		Matrix Codes	
DW - Drinking Water		GW - Ground Water	
WW - Water		SW - Surface Water	
SO - Soil		SL - Sludge	
SED - Sediment		OI - Oil	
LIQ - Other Liquid		AIR - Air	
SOL - Other Solid		WP - Wipe	
FB - Field Blank			
Turnaround Time (Business days)		Data Deliverable Information	
Comments / Special Instructions			
<input checked="" type="checkbox"/> Standard		<input type="checkbox"/> Commercial "A" (Level 1)	
<input type="checkbox"/> 5 Day RUSH		<input type="checkbox"/> Commercial "B" (Level 2)	
<input type="checkbox"/> 4 Day RUSH		<input type="checkbox"/> FULT1 (Level 3+4)	
<input type="checkbox"/> 3 Day RUSH		<input type="checkbox"/> REDT1 (Level 3+4)	
<input type="checkbox"/> 2 Day RUSH		<input type="checkbox"/> Commercial "C"	
<input type="checkbox"/> 1 Day EMERGENCY		<input checked="" type="checkbox"/> TRRP	
Emergency & Rush T/A data available VIA Lablink		<input type="checkbox"/> EDD Format	
Approved By (Accutest PM):		<input type="checkbox"/> Other	
Commercial "A" = Results Only		Commercial "B" = Results + QC Summary	
Commercial "C" = Results + QC & Surrogate Summary			
Relinquished By: Julie Helfrich		Relinquished By: 2	
Date Time: 08/29/12 09:48		Date Time: 2	
Relinquished By: 3		Relinquished By: 4	
Date Time: 3		Date Time: 4	
Relinquished By: 5		Relinquished By: 5	
Date Time: 5		Date Time: 5	
Custody Seal #		<input type="checkbox"/> Intact	
<input type="checkbox"/> Not intact		Preserved where applicable	
<input type="checkbox"/> On line		Cooler Temp.	

TC15480: Chain of Custody

Page 1 of 3

Accutest Job Number: TC15480 Client: EARTHCON Project: 2ND QTRLY WELL
 Date / Time Received: 8/29/2012 Delivery Method: Airbill #'s:
 No. Coolers: 1 Therm ID: IRGUN5 Temp Adjustment Factor: -0.4
 Cooler Temps (Initial/Adjusted): #1: (3.7/3.3)

Cooler Security

Y or N

- | | | | | | |
|---------------------------|-------------------------------------|--------------------------|-----------------------|-------------------------------------|--------------------------|
| 1. Custody Seals Present: | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 3. COC Present: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Custody Seals Intact: | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 4. Smpl Dates/Time OK | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

Cooler Temperature

Y or N

- | | | |
|------------------------------|-------------------------------------|--------------------------|
| 1. Temp criteria achieved: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Cooler temp verification: | | |
| 3. Cooler media: | Ice (Bag) | |

Quality Control Preservation

Y or N N/A

- | | | | | | |
|---------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|
| 1. Trip Blank present / cooler: | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | WTB | STB |
| 2. Trip Blank listed on COC: | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. Samples preserved properly: | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | |
| 4. VOCs headspace free: | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | |

Sample Integrity - Documentation

Y or N

- | | | |
|--|-------------------------------------|--------------------------|
| 1. Sample labels present on bottles: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Container labeling complete: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 3. Sample container label / COC agree: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

Sample Integrity - Condition

Y or N

- | | | |
|----------------------------------|-------------------------------------|--------------------------|
| 1. Sample recvd within HT: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. All containers accounted for: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 3. Condition of sample: | Intact | |

Sample Integrity - Instructions

Y or N N/A

- | | | | |
|---|-------------------------------------|-------------------------------------|-------------------------------------|
| 1. Analysis requested is clear: | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| 2. Bottles received for unspecified tests | <input type="checkbox"/> | <input checked="" type="checkbox"/> | |
| 3. Sufficient volume recvd for analysis: | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| 4. Compositing instructions clear: | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 5. Filtering instructions clear: | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

Comments

 5.1
5

TC15480: Chain of Custody
Page 2 of 3

Sample Receipt Log

Page 2 of 2

Job #: TC15728

Date / Time Received: 9/4/2012 2:52:00 PM

Initials: CH

Client: DOW CHEMICAL

Cooler #	Sample ID:	Vol	Bot #	Location	Pres	pH	Therm ID	Initial Temp	Therm CF	Corrected Temp
1	TC15728-1	32oz	1	2-84	N/P	Note #2 - Preservative check not applicable.	IRGUN5	1.1	-0.4	0.7
1	TC15728-2	32oz	1	2-84	N/P	Note #2 - Preservative check not applicable.	IRGUN5	1.1	-0.4	0.7

5.1

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TC15480: Chain of Custody
Page 3 of 3

Appendix A Laboratory Data Package Cover Page

TC15480 This data package consists of

- ☐ This signature page, the laboratory review checklist, and the following reportable data:
- ☐ R1 Field chain-of-custody documentation;
- ☐ R2 Sample identification cross-reference;
- ☐ R3 Test reports (analytical data sheets) for each environmental sample that includes:
 - a) Items consistent with NELAC 5.13 or ISO/IEC 17025 Section 5.10
 - b) dilution factors,
 - c) preparation methods,
 - d) cleanup methods, and
 - e) if required for the project, tentatively identified compounds (TICs).
- ☐ R4 Surrogate recovery data including:
 - a) Calculated recovery (%R), and
 - b) The laboratory's surrogate QC limits.
- ☐ R5 Test reports/summary forms for blank samples;
- ☐ R6 Test reports/summary forms for laboratory control samples (LCSs) including:
 - a) LCS spiking amounts,
 - b) Calculated %R for each analyte, and
 - c) The laboratory's LCS QC limits.
- ☐ R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
 - a) Samples associated with the MS/MSD clearly identified,
 - b) MS/MSD spiking amounts,
 - c) Concentration of each MS/MSD analyte measured in the parent and
 - d) Calculated %Rs and relative percent differences (RPDs), and
 - e) The laboratory's MS/MSD QC limits
- ☐ R8 Laboratory analytical duplicate (if applicable) recovery and precision:
 - a) The amount of analyte measured in the duplicate,
 - b) The calculated RPD, and
 - c) The laboratory's QC limits for analytical duplicates.
- ☐ R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each
- ☐ R10 Other problems or anomalies.

The Exception Report for each "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Report. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratory in the Laboratory Review Checklist, and no information or data have been knowingly withheld.

Check, if applicable: This laboratory meets an exception under 30 TAC&25.6 and was last inspection by

☐ [X] TCEQ or ☐ [] _____ on April 2011. Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

QA Manager

Name (Printed)

Signature

Official Title (printed)

Date

Richard Rodriguez



Laboratory Director

9/6/2012

LABORATORY REVIEW CHECKLIST: REPORTABLE DATA									
Laboratory Name:		Accutest Gulf Coast		LRC Date:		9/6/2012			
Project Name:		Quarterly Well Sampling, Parker County, Texas		Laboratory Project Number:		TC15480			
Reviewer Name:		Anita Patel		Prep Batch Number(s):		GSS181, VC1174			
# ¹	A ²	DESCRIPTION				YES	NO	NA ³	NR ⁴ ER # ⁵
R1	OI	CHAIN-OF-CUSTODY (C-O-C):							
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?				X			
		Were all departures from standard conditions described in an exception report?				X			
R2	OI	Sample and quality control (QC) identification							
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?				X			
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?				X			
R3	OI	Test reports							
		Were samples prepared and analyzed within holding times?				X			
		Other than those results <MQL, were all other raw values bracketed by calibration standards?				X			
		Were calculations checked by a peer or supervisor?				X			
		Were all analyte identifications checked by a peer or supervisor?				X			
		Were sample detection limits reported for all analytes not detected?				X			
		Were all results for soil and sediment samples reported on a dry weight basis?						X	
		Were % moisture (or solids) reported for all soil and sediment samples?						X	
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW846 Method 5035?						X	
		If required for the project, are TIC's reported?						X	
R4	O	Surrogate recovery data							
		Were surrogates added prior to extraction?				X			
		Were surrogate percent recoveries in all samples within the laboratory QC limits?				X			
R5	OI	Test reports/summary forms for blank samples							
		Were appropriate type(s) of blanks analyzed?				X			
		Were blanks analyzed at the appropriate frequency?				X			
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?				X			
		Were blank concentrations <MQL?				X			
R6	OI	Laboratory control samples (LCS):							
		Were all COCs included in the LCS?				X			
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?				X			
		Were LCSs analyzed at required frequency?				X			
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?				X			
		Does the detectability check sample data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?				X			2
		Was the LCSD RPD within QC limits?						X	
R7	OI	Matrix spike (MS) and matrix spike duplicate (MSD) data							
		Were the project/method specified analytes included in the MS and MSD?				X			
		Were MS/MSD analyzed at the appropriate frequency?				X			
		Were MS (and MSD, if applicable) %Rs within the laboratory QC Limits?				X			
		Were the MS/MSD RPDs within laboratory QC limits?				X			
R8	OI	Analytical duplicate data							
		Were appropriate analytical duplicates analyzed for each matrix?				X			
		Were analytical duplicates analyzed at the appropriate frequency?				X			
		Were RPDs or relative standard deviations within the laboratory QC limits?				X			
R9	OI	Method quantitation limits (MQLs):							
		Are the MQLs for each method analyte included in the laboratory data package?				X			
		Do the MQLs correspond to the concentration of the lowest non-zero calibration				X			
		Are unadjusted MQLs and DCSs included in the laboratory data package?					X		3
R10	OI	Other problems/anomalies							
		Are all known problems/anomalies/special conditions noted in this LRC and ER?				X			
		Was applicable and available technology used to lower the SDL to minimize the				X			
		Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices, and methods associated with this laboratory data package?				X			4

Laboratory Name:		Accutest Gulf Coast	LRC Date:		9/6/2012	
Project Name:		Quarterly Well Sampling, Parker	Laboratory Project Number:		TC15480	
Reviewer Name:		Anita Patel	Prep Batch Number(s):		GSS181, VC1174	
#	A ²	DESCRIPTION	YES	NO	NA ³	NR ⁴ ER # ⁵
S1	OI	Initial calibration (ICAL)				
		Were response factors and/or relative response factors for each analyte within QC limits?	X			
		Were percent RSDs or correlation coefficient criteria met?	X			
		Was the number of standards recommended in the method used for all analytes?	X			
		Were all points generated between the lowest and highest standard used to calculate the curve?	X			
		Are ICAL data available for all instruments used?	X			
		Has the initial calibration curve been verified using an appropriate second source standard?	X			
S2	OI	Initial and continuing calibration verification (ICCV AND CCV) and continuing				
		Was the CCV analyzed at the method-required frequency?	X			
		Were percent differences for each analyte within the method-required QC limits?	X			
		Was the ICAL curve verified for each analyte?	X			
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?			X	
S3	O	Mass spectral tuning				
		Was the appropriate compound for the method used for tuning?	X			
		Were ion abundance data within the method-required QC limits?	X			
S4	O	Internal standards (IS)				
		Were IS area counts and retention times within the method-required QC limits?	X			
S5	OI	Raw data (NELAC Section 5.5.10)				
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X			
		Were data associated with manual integrations flagged on the raw data?	X			
S6	O	Dual column confirmation				
		Did dual column confirmation results meet the method-required QC?			X	
S7	O	Tentatively identified compounds (TICs):				
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X	
S8	I	Interference Check Sample (ICS) results				
		Were percent recoveries within method QC limits?			X	
S9	I	Serial dilutions, post digestion spikes, and method of standard additions				
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			X	
S10	OI	Method detection limit (MDL) studies				
		Was a MDL study performed for each reported analyte?	X			
		Is the MDL either adjusted or supported by the analysis of DCSs?	X			2
S11	OI	Proficiency test reports				
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X			
S12	OI	Standards documentation				
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate source?	X			
S13	OI	Compound/analyte identification procedures				
		Are the procedures for compound/analyte identification documented?	X			
S14	OI	Demonstration of analyst competency (DOC)				
		Was DOC conducted consistent with NELAC Chapter 5?	X			
		Is documentation of the analyst's competency up-to-date and on file?	X			
S15	OI	Verification/validation documentation for methods (NELAC Chapter 5)				
		Are all the methods used to generate the data documented, verified, and validated, where applicable?	X			
S16	OI	Laboratory standard operating procedures (SOPs)				
		Are laboratory SOPs current and on file for each method performed?	X			

LABORATORY REVIEW CHECKLIST (continued): Exception Reports			
Laboratory Name:		Accutest Gulf Coast	LRC Date:
Project Name:		Quarterly Well Sampling, Parker	Laboratory Project Number:
Reviewer Name:		Anita Patel	Prep Batch Number(s):
			GSS181, VC1174
ER# ¹	Description		
1	For reporting purposes, the MQL is defined in the report as the RL. The unadjusted MQL/RL is reported in the method blank. The SDL is defined in the report as the MDL.		
2	The Laboratory does not perform DCS analysis for Method RSKSOP-147/175. The components reported are not listed or do not have values in the Texas TRRP PCL tables.		
3	For reporting purposes, the method blank represents the unadjusted MQL. The DCS is on file in the laboratory and is not included in the laboratory data package.		
4	The laboratory is NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices, and methods associated with this laboratory data package for analytes that are listed in the Texas Fields of Accreditation.		

1ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked on

5.2
5

GC/MS Volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries



Method Blank Summary

Page 1 of 1

Job Number: TC15480

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VC1174-MB	C00254984.D1		08/31/12	CF	n/a	n/a	VC1174

The QC reported here applies to the following samples:

Method: SW846 8260B

TC15480-1

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.34	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.32	ug/l	
108-88-3	Toluene	ND	1.0	0.33	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.87	ug/l	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	100%	72-122%
17060-07-0	1,2-Dichloroethane-D4	110%	68-124%
2037-26-5	Toluene-D8	101%	80-119%
460-00-4	4-Bromofluorobenzene	104%	72-126%

6.1.1

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Blank Spike Summary

Page 1 of 1

Job Number: TC15480

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VC1174-BS	C00254982.D1		08/31/12	CF	n/a	n/a	VC1174

The QC reported here applies to the following samples:

Method: SW846 8260B

TC15480-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2	Benzene	25	24.0	96	76-118
100-41-4	Ethylbenzene	25	24.3	97	75-112
108-88-3	Toluene	25	21.6	86	77-114
1330-20-7	Xylene (total)	75	72.5	97	75-111

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	102%	79-122%
17060-07-0	1,2-Dichloroethane-D4	103%	75-121%
2037-26-5	Toluene-D8	95%	87-119%
460-00-4	4-Bromofluorobenzene	101%	80-133%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: TC15480

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC15249-4MS	C00254986.D1		08/31/12	CF	n/a	n/a	VC1174
TC15249-4MSD	C00254987.D1		08/31/12	CF	n/a	n/a	VC1174
TC15249-4	C00254985.D1		08/31/12	CF	n/a	n/a	VC1174

The QC reported here applies to the following samples:

Method: SW846 8260B

TC15480-1

CAS No.	Compound	TC15249-4 ug/l	Q	Spike ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	ND		25	22.3	89	22.4	90	0	68-119/12
100-41-4	Ethylbenzene	0.44	J	25	23.5	92	23.5	92	0	71-117/12
108-88-3	Toluene	0.37	J	25	23.8	94	21.9	86	8	73-119/13
1330-20-7	Xylene (total)	4.5		75	75.5	95	76.6	96	1	74-119/13

CAS No.	Surrogate Recoveries	MS	MSD	TC15249-4	Limits
1868-53-7	Dibromofluoromethane	105%	101%	100%	72-122%
17060-07-0	1,2-Dichloroethane-D4	100%	99%	107%	68-124%
2037-26-5	Toluene-D8	103%	97%	106%	80-119%
460-00-4	4-Bromofluorobenzene	90%	103%	100%	72-126%

* = Outside of Control Limits.

GC Volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Page 1 of 1

Job Number: TC15480

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GSS181-MB	SS003712.D	1	09/04/12	LT	n/a	n/a	GSS181

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC15480-1

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	ND	0.50	0.30	ug/l	
74-85-1	Ethene	ND	1.0	0.50	ug/l	
74-84-0	Ethane	ND	1.0	0.50	ug/l	
74-98-6	Propane	ND	1.5	0.75	ug/l	
75-28-5	Isobutane	ND	1.5	0.75	ug/l	
106-97-8	Butane	ND	1.5	0.75	ug/l	

7.1.1

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Blank Spike Summary

Page 1 of 1

Job Number: TC15480

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GSS181-BS	SS003710.D	1	09/04/12	LT	n/a	n/a	GSS181

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC15480-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
74-82-8	Methane	21.5	21.7	101	68-139
74-85-1	Ethene	57.4	44.7	78	52-145
74-84-0	Ethane	43.3	31.5	73	68-131
74-98-6	Propane	60.6	47.2	78	69-131
75-28-5	Isobutane	72.5	60.0	83	72-131
106-97-8	Butane	76.6	63.6	83	66-128

* = Outside of Control Limits.

Matrix Spike Summary

Page 1 of 1

Job Number: TC15480

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC15494-1MS	SS003719.D	1	09/04/12	LT	n/a	n/a	GSS181
TC15494-1	SS003718.D	1	09/04/12	LT	n/a	n/a	GSS181

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC15480-1

CAS No.	Compound	TC15494-1		Spike	MS	MS	Limits
		ug/l	Q	ug/l	ug/l	%	
74-82-8	Methane	0.50	U	21.5	21.4	99	68-139
74-85-1	Ethene	1.0	U	57.4	60.9	106	52-145
74-84-0	Ethane	1.0	U	43.3	43.8	101	68-131
74-98-6	Propane	1.5	U	60.6	63.6	105	69-131
75-28-5	Isobutane	1.5	U	72.5	79.7	110	72-131
106-97-8	Butane	1.5	U	76.6	83.9	110	66-128

* = Outside of Control Limits.

Duplicate Summary

Page 1 of 1

Job Number: TC15480

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC15494-2DUP	SS003722.D	1	09/04/12	LT	n/a	n/a	GSS181
TC15494-2	SS003721.D	1	09/04/12	LT	n/a	n/a	GSS181

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC15480-1

CAS No.	Compound	TC15494-2 ug/l	DUP Q ug/l	Q	RPD	Limits
74-82-8	Methane	0.50 U	ND	nc	53	
74-85-1	Ethene	1.0 U	ND	nc	27	
74-84-0	Ethane	1.0 U	ND	nc	43	
74-98-6	Propane	1.5 U	ND	nc	21	
75-28-5	Isobutane	1.5 U	ND	nc	35	
106-97-8	Butane	1.5 U	ND	nc	33	

* = Outside of Control Limits.



08/31/12

Technical Report for

EarthCon Consultants

Quarterly Well Sampling, Parker County, Texas

2nd Quater / WW20-HUF

Accutest Job Number: TC14964

Sampling Date: 08/19/12

Report to:

EarthCon Consultants
4800 Sugar Grove Suite 420
Stafford, TX 77477
gfloreslovo@earthcon.com; djackson@jacksonsjoberg.com;
mcpatton@rangeresources.com; escott@earthcon.com
ATTN: Gabriela Floreslovo

Total number of pages in report: **25**



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.


Richard Rodriguez
Laboratory Director

Client Service contact: Elessa Sommers 713-271-4700

Certifications: TX (T104704220-12-8) AR (11-028-0) AZ (AZ0769) FL (E87628) KS (E-10366)
LA (85695/04004) OK (211-035)

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Test results relate only to samples analyzed.

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Sample Summary

EarthCon Consultants

Job No: TC14964

Quarterly Well Sampling, Parker County, Texas
Project No: 2nd Quater / WW20-HUF

Sample Number	Collected Date	Time By	Received	Matrix Code	Type	Client Sample ID
TC14964-1	08/19/12	10:40	08/21/12	AQ	Ground Water	WW20-HUF-081912



SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: EarthCon Consultants

Job No TC14964

Site: Quarterly Well Sampling, Parker County, Texas

Report Date 8/31/2012 6:49:13 PM

1 Sample was collected on 08/19/2012 and received intact at Accutest on 08/21/2012 and properly preserved in 1 cooler at 2.4 Deg C. The sample received an Accutest job number of TC14964. A listing of the Laboratory Sample ID, Client Sample ID and date of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

Volatiles by GCMS By Method SW846 8260B

Matrix AQ	Batch ID: VK449
------------------	------------------------

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC14974-3MS, TC14974-3MSD were used as the QC samples indicated.

Volatiles by GC By Method RSKSOP-147/175

Matrix AQ	Batch ID: GSS178
------------------	-------------------------

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC14970-1DUP, TC14970-1MS were used as the QC samples indicated.
- Matrix Spike Recovery for Methane is outside control limits. Outside control limits due to high level in sample relative to spike amount.

Accutest Laboratories Gulf Coast (ALGC) certifies that this report meets the project requirements for analytical data produced for the samples as received at ALGC and as stated on the COC. ALGC certifies that the data meets the Data Quality Objectives for precision, accuracy and completeness as specified in the ALGC Quality Manual except as noted above. This report is to be used in its entirety. ALGC is not responsible for any assumptions of data quality if partial data packages are used

Summary of Hits

Page 1 of 1

Job Number: TC14964
Account: EarthCon Consultants
Project: Quarterly Well Sampling, Parker County, Texas
Collected: 08/19/12



Lab Sample ID Analyte	Client Sample ID	Result/ Qual	ML	SDL	Units	Method
TC14964-1	WW20-HUF-081912					
Methane		0.848	0.0050	0.0030	mg/l	RSKSOP-147/175
Ethane		0.00736	0.0010	0.00050	mg/l	RSKSOP-147/175



Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	WW20-HUF-081912	Date Sampled:	08/19/12
Lab Sample ID:	TC14964-1	Date Received:	08/21/12
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260B		
Project:	Quarterly Well Sampling, Parker County, Texas		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	K10047.D	1	08/23/12	EM	n/a	n/a	VK449
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

Purgeable Aromatics

CAS No.	Compound	Result	MQL	SDL	Units	Q
71-43-2	Benzene	0.00025 U	0.0010	0.00025	mg/l	
108-88-3	Toluene	0.00026 U	0.0010	0.00026	mg/l	
100-41-4	Ethylbenzene	0.00025 U	0.0010	0.00025	mg/l	
1330-20-7	Xylene (total)	0.00071 U	0.0030	0.00071	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	101%		79-122%
17060-07-0	1,2-Dichloroethane-D4	96%		75-121%
2037-26-5	Toluene-D8	102%		87-119%
460-00-4	4-Bromofluorobenzene	124%		80-133%

U = Not detected SDL - Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WW20-HUF-081912	Date Sampled:	08/19/12
Lab Sample ID:	TC14964-1	Date Received:	08/21/12
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	RSKSOP-147/175		
Project:	Quarterly Well Sampling, Parker County, Texas		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	SS003629.D	1	08/27/12	LT	n/a	n/a	GSS178
Run #2	SS003630.D	10	08/27/12	LT	n/a	n/a	GSS178

RSK147 Special List

CAS No.	Compound	Result	MQL	SDL	Units	Q
74-82-8	Methane	0.848 ^a	0.0050	0.0030	mg/l	
74-85-1	Ethene	0.00050 U	0.0010	0.00050	mg/l	
74-84-0	Ethane	0.00736	0.0010	0.00050	mg/l	
74-98-6	Propane	0.00075 U	0.0015	0.00075	mg/l	
75-28-5	Isobutane	0.00075 U	0.0015	0.00075	mg/l	
106-97-8	Butane	0.00075 U	0.0015	0.00075	mg/l	

(a) Result is from Run# 2

U = Not detected SDL - Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Misc. Forms

5

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody
- LRC Form

10165 Harwin Dr. Ste 150 Houston, TX 77036
TEL: 713-271-4700 FAX: 713-271-4770
www.acctest.com

[illegible]

5.1

TC14964: Chain of Custody
Page 1 of 3



Accutest Laboratories Sample Receipt Summary

Page 1 of 2

Accutest Job Number: TC14964 Client: EARTHCON CONSULTANTS Project: 2ND QUARTERLY
Date / Time Received: 8/21/2012 Delivery Method: FedEx Airbill #'s: 801561645028
No. Coolers: 1 Therm ID: IRGUN5; Temp Adjustment Factor: -0.4;
Cooler Temps (Initial/Adjusted): #1: (2.8/2.4);

Cooler Security

Y or N

- | | | | | | |
|---------------------------|-------------------------------------|--------------------------|-----------------------|-------------------------------------|--------------------------|
| 1. Custody Seals Present: | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 3. COC Present: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Custody Seals Intact: | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 4. Smpl Dates/Time OK | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

Cooler Temperature

Y or N

- | | | |
|------------------------------|-------------------------------------|--------------------------|
| 1. Temp criteria achieved: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Cooler temp verification: | | |
| 3. Cooler media: | Ice (Bag) | |

Quality Control Preservation

Y or N

N/A

WTB STB

- | | | | | | |
|---------------------------------|-------------------------------------|-------------------------------------|--------------------------|-------------------------------------|--------------------------|
| 1. Trip Blank present / cooler: | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Trip Blank listed on COC: | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | |
| 3. Samples preserved properly: | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | |
| 4. VOCs headspace free: | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | |

Sample Integrity - Documentation

Y or N

- | | | |
|--|-------------------------------------|--------------------------|
| 1. Sample labels present on bottles: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Container labeling complete: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 3. Sample container label / COC agree: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

Sample Integrity - Condition

Y or N

- | | | |
|----------------------------------|-------------------------------------|--------------------------|
| 1. Sample recvd within HT: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. All containers accounted for: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 3. Condition of sample: | Intact | |

Sample Integrity - Instructions

Y or N N/A

- | | | | |
|---|-------------------------------------|-------------------------------------|-------------------------------------|
| 1. Analysis requested is clear: | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| 2. Bottles received for unspecified tests | <input type="checkbox"/> | <input checked="" type="checkbox"/> | |
| 3. Sufficient volume recvd for analysis: | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| 4. Compositing instructions clear: | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 5. Filtering instructions clear: | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

Comments

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TC14964: Chain of Custody
Page 2 of 3

Sample Receipt Log

Page 2 of 2

Job #: TC13879

Date / Time Received: 8/2/2012 9:50:00 AM

Initials: BG

Client: SPECTRA ENERGY

Cooler #	Sample ID:	Vol	Bot #	Location	Pres	pH	Therm ID	Initial Temp	Therm CF	Corrected Temp
1	TC13879-1	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-1	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-2	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-2	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-3	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-3	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-4	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-4	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-5	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-5	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-6	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-6	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1

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TC14964: Chain of Custody
Page 3 of 3

Appendix A Laboratory Data Package Cover Page

TC14964 This data package consists of

- ☐ This signature page, the laboratory review checklist, and the following reportable data:
- ☐ R1 Field chain-of-custody documentation;
- ☐ R2 Sample identification cross-reference;
- ☐ R3 Test reports (analytical data sheets) for each environmental sample that includes:
 - a) Items consistent with NELAC 5.13 or ISO/IEC 17025 Section 5.10
 - b) dilution factors,
 - c) preparation methods,
 - d) cleanup methods, and
 - e) if required for the project, tentatively identified compounds (TICs).
- ☐ R4 Surrogate recovery data including:
 - a) Calculated recovery (%R), and
 - b) The laboratory's surrogate QC limits.
- ☐ R5 Test reports/summary forms for blank samples;
- ☐ R6 Test reports/summary forms for laboratory control samples (LCSs) including:
 - a) LCS spiking amounts,
 - b) Calculated %R for each analyte, and
 - c) The laboratory's LCS QC limits.
- ☐ R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
 - a) Samples associated with the MS/MSD clearly identified,
 - b) MS/MSD spiking amounts,
 - c) Concentration of each MS/MSD analyte measured in the parent and
 - d) Calculated %Rs and relative percent differences (RPDs), and
 - e) The laboratory's MS/MSD QC limits
- ☐ R8 Laboratory analytical duplicate (if applicable) recovery and precision:
 - a) The amount of analyte measured in the duplicate,
 - b) The calculated RPD, and
 - c) The laboratory's QC limits for analytical duplicates.
- ☐ R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each
- ☐ R10 Other problems or anomalies.

The Exception Report for each "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Report. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratory in the Laboratory Review Checklist, and no information or data have been knowingly withheld.

Check, if applicable: This laboratory meets an exception under 30 TAC&25.6 and was last inspection by

☐ [X] TCEQ or ☐ _____ on April 2011. Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

QA Manager

Name (Printed)

Signature

Official Title (printed)

Date

Richard Rodriguez



Laboratory Director

8/29/2012

LABORATORY REVIEW CHECKLIST: REPORTABLE DATA									
Laboratory Name:		Accutest Gulf Coast		LRC Date:		8/29/2012			
Project Name:		Quarterly Well Sampling, Parker County, Texas		Laboratory Project Number:		TC14964			
Reviewer Name:		Anita Patel		Prep Batch Number(s):		GSS178, VK449			
# ¹	A ²	DESCRIPTION				YES NO NA ³ NR ⁴ ER ⁵			
R1	OI	CHAIN-OF-CUSTODY (C-O-C):							
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?				X			
		Were all departures from standard conditions described in an exception report?				X			
R2	OI	Sample and quality control (QC) identification							
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?				X			
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?				X			
R3	OI	Test reports							
		Were samples prepared and analyzed within holding times?				X			
		Other than those results <MQL, were all other raw values bracketed by calibration standards?				X			
		Were calculations checked by a peer or supervisor?				X			
		Were all analyte identifications checked by a peer or supervisor?				X			
		Were sample detection limits reported for all analytes not detected?				X			
		Were all results for soil and sediment samples reported on a dry weight basis?						X	
		Were % moisture (or solids) reported for all soil and sediment samples?						X	
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW846 Method 5035?						X	
		If required for the project, are TIC's reported?						X	
R4	O	Surrogate recovery data							
		Were surrogates added prior to extraction?				X			
		Were surrogate percent recoveries in all samples within the laboratory QC limits?				X			
R5	OI	Test reports/summary forms for blank samples							
		Were appropriate type(s) of blanks analyzed?				X			
		Were blanks analyzed at the appropriate frequency?				X			
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?				X			
		Were blank concentrations <MQL?				X			
R6	OI	Laboratory control samples (LCS):							
		Were all COCs included in the LCS?				X			
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?				X			
		Were LCSs analyzed at required frequency?				X			
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?				X			
		Does the detectability check sample data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?				X			5
		Was the LCSD RPD within QC limits?						X	
R7	OI	Matrix spike (MS) and matrix spike duplicate (MSD) data							
		Were the project/method specified analytes included in the MS and MSD?				X			
		Were MS/MSD analyzed at the appropriate frequency?				X			
		Were MS (and MSD, if applicable) %Rs within the laboratory QC Limits?						X	4
		Were the MS/MSD RPDs within laboratory QC limits?				X			
R8	OI	Analytical duplicate data							
		Were appropriate analytical duplicates analyzed for each matrix?				X			
		Were analytical duplicates analyzed at the appropriate frequency?				X			
		Were RPDs or relative standard deviations within the laboratory QC limits?				X			
R9	OI	Method quantitation limits (MQLs):							
		Are the MQLs for each method analyte included in the laboratory data package?				X			
		Do the MQLs correspond to the concentration of the lowest non-zero calibration				X			
		Are unadjusted MQLs and DCSS included in the laboratory data package?						X	2
R10	OI	Other problems/anomalies							
		Are all known problems/anomalies/special conditions noted in this LRC and ER?				X			
		Was applicable and available technology used to lower the SDL to minimize the				X			
		Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices, and methods associated with this laboratory data package?				X			3

Laboratory Name:		Accutest Gulf Coast	LRC Date:		8/29/2012	
Project Name:		Quarterly Well Sampling, Parker	Laboratory Project Number:		TC14964	
Reviewer Name:		Anita Patel	Prep Batch Number(s):		GSS178, VK449	
# ¹	A ²	DESCRIPTION	YES	NO	NA ³	NR ⁴ ER # ⁵
S1	OI	Initial calibration (ICAL)				
		Were response factors and/or relative response factors for each analyte within QC limits?	X			
		Were percent RSDs or correlation coefficient criteria met?	X			
		Was the number of standards recommended in the method used for all analytes?	X			
		Were all points generated between the lowest and highest standard used to calculate the curve?	X			
		Are ICAL data available for all instruments used?	X			
		Has the initial calibration curve been verified using an appropriate second source standard?	X			
S2	OI	Initial and continuing calibration verification (ICCV AND CCV) and continuing				
		Was the CCV analyzed at the method-required frequency?	X			
		Were percent differences for each analyte within the method-required QC limits?	X			
		Was the ICAL curve verified for each analyte?	X			
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?			X	
S3	O	Mass spectral tuning				
		Was the appropriate compound for the method used for tuning?	X			
		Were ion abundance data within the method-required QC limits?	X			
S4	O	Internal standards (IS)				
		Were IS area counts and retention times within the method-required QC limits?	X			
S5	OI	Raw data (NELAC Section 5.5.10)				
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X			
		Were data associated with manual integrations flagged on the raw data?	X			
S6	O	Dual column confirmation				
		Did dual column confirmation results meet the method-required QC?			X	
S7	O	Tentatively identified compounds (TICs):				
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X	
S8	I	Interference Check Sample (ICS) results				
		Were percent recoveries within method QC limits?			X	
S9	I	Serial dilutions, post digestion spikes, and method of standard additions				
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			X	
S10	OI	Method detection limit (MDL) studies				
		Was a MDL study performed for each reported analyte?	X			
		Is the MDL either adjusted or supported by the analysis of DCSs?	X			5
S11	OI	Proficiency test reports				
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X			
S12	OI	Standards documentation				
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate source?	X			
S13	OI	Compound/analyte identification procedures				
		Are the procedures for compound/analyte identification documented?	X			
S14	OI	Demonstration of analyst competency (DOC)				
		Was DOC conducted consistent with NELAC Chapter 5?	X			
		Is documentation of the analyst's competency up-to-date and on file?	X			
S15	OI	Verification/validation documentation for methods (NELAC Chapter 5)				
		Are all the methods used to generate the data documented, verified, and validated, where applicable?	X			
S16	OI	Laboratory standard operating procedures (SOPs)				
		Are laboratory SOPs current and on file for each method performed?	X			

LABORATORY REVIEW CHECKLIST (continued): Exception Reports			
Laboratory Name:	Accutest Gulf Coast	LRC Date:	8/29/2012
Project Name:	Quarterly Well Sampling, Parker	Laboratory Project Number:	TC14964
Reviewer Name:	Anita Patel	Prep Batch Number(s):	GSS178, VK449
ER# ¹	Description		
1	For reporting purposes, the MQL is defined in the report as the RL. The unadjusted MQL/RL is reported in the method blank. The SDL is defined in the report as the MDL.		
2	For reporting purposes, the method blank represents the unadjusted MQL. The DCS is on file in the laboratory and is not included in the laboratory data package.		
3	The laboratory is NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices, and methods associated with this laboratory data package for analytes that are listed in the Texas Fields of Accreditation.		
4	All anomalies are discussed in the case narrative.		
5	The Laboratory does not perform DCS analysis for Method RSKSOP-147/175. The components reported are not listed or do not have values in the Texas TRRP PCL tables.		

¹ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked on

GC/MS Volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries



Method Blank Summary

Page 1 of 1

Job Number: TC14964

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VK449-MB	K10026.D	1	08/23/12	EM	n/a	n/a	VK449

The QC reported here applies to the following samples:

Method: SW846 8260B

TC14964-1

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.25	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.25	ug/l	
108-88-3	Toluene	ND	1.0	0.26	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.71	ug/l	

CAS No.	Surrogate Recoveries	Limits
1868-53-7	Dibromofluoromethane	101% 79-122%
17060-07-0	1,2-Dichloroethane-D4	96% 75-121%
2037-26-5	Toluene-D8	102% 87-119%
460-00-4	4-Bromofluorobenzene	123% 80-133%

6.1.1

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Blank Spike Summary

Page 1 of 1

Job Number: TC14964
Account: PESTXST EarthCon Consultants
Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VK449-BS	K10024.D	1	08/23/12	EM	n/a	n/a	VK449

The QC reported here applies to the following samples:

Method: SW846 8260B

TC14964-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2	Benzene	25	24.2	97	76-118
100-41-4	Ethylbenzene	25	25.2	101	75-112
108-88-3	Toluene	25	25.0	100	77-114
1330-20-7	Xylene (total)	75	76.6	102	75-111

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	99%	79-122%
17060-07-0	1,2-Dichloroethane-D4	95%	75-121%
2037-26-5	Toluene-D8	103%	87-119%
460-00-4	4-Bromofluorobenzene	123%	80-133%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: TC14964

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC14974-3MS	K10030.D	1	08/23/12	EM	n/a	n/a	VK449
TC14974-3MSD	K10031.D	1	08/23/12	EM	n/a	n/a	VK449
TC14974-3 ^a	K10029.D	1	08/23/12	EM	n/a	n/a	VK449

The QC reported here applies to the following samples:

Method: SW846 8260B

TC14964-1

CAS No.	Compound	TC14974-3 ug/l	Spike Q	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	1.0 U	25	24.1	96	23.3	93	3	76-118/16
100-41-4	Ethylbenzene	1.0 U	25	25.1	100	24.2	97	4	75-112/12
108-88-3	Toluene	1.0 U	25	24.8	99	23.8	95	4	77-114/12
1330-20-7	Xylene (total)	3.0 U	75	74.8	100	73.2	98	2	75-111/12

CAS No.	Surrogate Recoveries	MS	MSD	TC14974-3	Limits
1868-53-7	Dibromofluoromethane	99%	99%	100%	79-122%
17060-07-0	1,2-Dichloroethane-D4	96%	95%	96%	75-121%
2037-26-5	Toluene-D8	103%	102%	102%	87-119%
460-00-4	4-Bromofluorobenzene	122%	122%	121%	80-133%

(a) Sample was not preserved to a pH < 2

* = Outside of Control Limits.

GC Volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

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Method Blank Summary

Page 1 of 1

Job Number: TC14964

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GSS178-MB	SS003617.D	1	08/27/12	LT	n/a	n/a	GSS178

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC14964-1

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	ND	0.50	0.30	ug/l	
74-85-1	Ethene	ND	1.0	0.50	ug/l	
74-84-0	Ethane	ND	1.0	0.50	ug/l	
74-98-6	Propane	ND	1.5	0.75	ug/l	
75-28-5	Isobutane	ND	1.5	0.75	ug/l	
106-97-8	Butane	ND	1.5	0.75	ug/l	

7.1.1

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Blank Spike Summary

Page 1 of 1

Job Number: TC14964

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GSS178-BS	SS003615.D	1	08/27/12	LT	n/a	n/a	GSS178

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC14964-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
74-82-8	Methane	21.5	20.8	97	70-130
74-85-1	Ethene	57.4	58.2	101	70-130
74-84-0	Ethane	43.3	41.8	97	70-130
74-98-6	Propane	60.6	56.5	93	70-130
75-28-5	Isobutane	72.5	71.1	98	70-130
106-97-8	Butane	76.6	73.7	96	70-130

* = Outside of Control Limits.

Matrix Spike Summary

Page 1 of 1

Job Number: TC14964

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC14970-1MS	SS003620.D	1	08/27/12	LT	n/a	n/a	GSS178
TC14970-1	SS003618.D	1	08/27/12	LT	n/a	n/a	GSS178
TC14970-1	SS003621.D	10	08/27/12	LT	n/a	n/a	GSS178

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC14964-1

CAS No.	Compound	TC14970-1 ug/l	Spike Q	MS ug/l	MS %	Limits
74-82-8	Methane	914 ^b	21.5	600	-337* ^a	60-140
74-85-1	Ethene	1.0 U	57.4	58.8	102	60-140
74-84-0	Ethane	42.3	43.3	71.7	68	60-140
74-98-6	Propane	1.5 U	60.6	56.4	93	60-140
75-28-5	Isobutane	1.5 U	72.5	70.6	97	60-140
106-97-8	Butane	1.5 U	76.6	74.0	97	60-140

(a) Outside control limits due to high level in sample relative to spike amount.

(b) Result is from Run #2.

* = Outside of Control Limits.

Duplicate Summary

Page 1 of 1

Job Number: TC14964

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC14970-1DUP	SS003619.D	1	08/27/12	LT	n/a	n/a	GSS178
TC14970-1	SS003618.D	1	08/27/12	LT	n/a	n/a	GSS178
TC14970-1	SS003621.D	10	08/27/12	LT	n/a	n/a	GSS178

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC14964-1

CAS No.	Compound	TC14970-1	DUP	Q	RPD	Limits
		ug/l	ug/l			
74-82-8	Methane	914 ^a	869	E	26	30
74-85-1	Ethene	1.0 U	ND		nc	30
74-84-0	Ethane	42.3	57.4		30	30
74-98-6	Propane	1.5 U	ND		nc	30
75-28-5	Isobutane	1.5 U	ND		nc	30
106-97-8	Butane	1.5 U	ND		nc	30

(a) Result is from Run #2.

* = Outside of Control Limits.

Lab #: 261147 Job #: 19036
 Sample Name/Number: WW20-HUF-081912
 Company: Oil Tracers, LLC
 Date Sampled: 8/19/2012
 Container: Dissolved Gas Bottle
 Field/Site Name: Second Quarter Well Sampling
 Location: Parker County, TX
 Formation/Depth:
 Sampling Point:
 Date Received: 8/22/2012 Date Reported: 9/11/2012

Component	Chemical mol. %	$\delta^{13}\text{C}$ ‰	δD ‰	$\delta^{18}\text{O}$ ‰
Carbon Monoxide -----	nd			
Hydrogen Sulfide -----	na			
Helium -----	na			
Hydrogen -----	nd			
Argon -----	1.53			
Oxygen -----	0.076			
Nitrogen -----	87.65			
Carbon Dioxide -----	0.18			
Methane -----	10.53	-44.92	-152.3	
Ethane -----	0.0371			
Ethylene -----	nd			
Propane -----	nd			
Propylene -----	nd			
Iso-butane -----	nd			
N-butane -----	nd			
Iso-pentane -----	nd			
N-pentane -----	nd			
Hexanes + -----	0.0004			

Total BTU/cu.ft. dry @ 60deg F & 14.73psia, calculated: 107

Specific gravity, calculated: 0.931

Remarks:

Analysis is of gas extracted from water by headspace equilibration. Analysis has been corrected for helium added to create headspace. Helium dilution factor = 0.74

*Addition of helium negates the ability to detect native helium and may negate the ability to detect hydrogen.

nd = not detected. na = not analyzed. Isotopic composition of hydrogen is relative to VSMOW. Isotopic composition of carbon is relative to VPDB. Isotopic composition of oxygen is relative to VSMOW, except for carbon dioxide which is relative to VPDB. Calculations for BTU and specific gravity per ASTM D3588. Chemical compositions are normalized to 100%. Mol. % is approximately equal to vol. %.



08/31/12

Technical Report for

EarthCon Consultants

Quarterly Well Sampling, Parker County, Texas

2nd Quarter / WW14A-HUR

Accutest Job Number: TC14970

Sampling Date: 08/18/12

Report to:

EarthCon Consultants
4800 Sugar Grove Suite 420
Stafford, TX 77477
gfloreslovo@earthcon.com; djackson@jacksonsjoberg.com;
mcpatton@rangeresources.com; escott@earthcon.com
ATTN: Gabriela Floreslovo

Total number of pages in report: **25**



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.


Richard Rodriguez
Laboratory Director

Client Service contact: Elessa Sommers 713-271-4700

Certifications: TX (T104704220-12-8) AR (11-028-0) AZ (AZ0769) FL (E87628) KS (E-10366)
LA (85695/04004) OK (211-035)

This report shall not be reproduced, except in its entirety, without the written approval of Accutest Laboratories.
Test results relate only to samples analyzed.

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Sample Summary

EarthCon Consultants

Job No: TC14970

Quarterly Well Sampling, Parker County, Texas
Project No: 2nd Quarter / WW14A-HUR

Sample Number	Collected Date	Time By	Received	Matrix Code Type	Client Sample ID
TC14970-1	08/18/12	15:09	08/21/12	AQ Ground Water	WW14A-HUR-081812
TC14970-1D	08/18/12	15:09	08/21/12	AQ Water Dup/MSD	WW14A-HUR-081812 MSD
TC14970-1S	08/18/12	15:09	08/21/12	AQ Water Matrix Spike	WW14A-HUR-081812 MS



SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: EarthCon Consultants

Job No TC14970

Site: Quarterly Well Sampling, Parker County, Texas

Report Date 8/31/2012 6:56:51 PM

1 Sample was collected on 08/18/2012 and received intact at Accutest on 08/21/2012 and properly preserved in 1 cooler at 1.9 Deg C. The sample received an Accutest job number of TC14970. A listing of the Laboratory Sample ID, Client Sample ID and date of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

Volatiles by GCMS By Method SW846 8260B

Matrix AQ	Batch ID: VZ3732
------------------	-------------------------

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC14970-1MS, TC14970-1MSD were used as the QC samples indicated.

Volatiles by GC By Method RSKSOP-147/175

Matrix AQ	Batch ID: GSS178
------------------	-------------------------

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC14970-1DUP, TC14970-1MS were used as the QC samples indicated.
- Matrix Spike Recovery for Methane is outside control limits. Outside control limits due to high level in sample relative to spike amount.

Accutest Laboratories Gulf Coast (ALGC) certifies that this report meets the project requirements for analytical data produced for the samples as received at ALGC and as stated on the COC. ALGC certifies that the data meets the Data Quality Objectives for precision, accuracy and completeness as specified in the ALGC Quality Manual except as noted above. This report is to be used in its entirety. ALGC is not responsible for any assumptions of data quality if partial data packages are used

Summary of Hits

Page 1 of 1

Job Number: TC14970

Account: EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Collected: 08/18/12



Lab Sample ID Analyte	Client Sample ID	Result/ Qual	ML	SDL	Units	Method
TC14970-1	WW14A-HUR-081812					
Methane		0.914	0.0050	0.0030	mg/l	RSKSOP-147/175
Ethane		0.0423	0.0010	0.00050	mg/l	RSKSOP-147/175



Sample Results

Report of Analysis

Report of Analysis

Page 1 of 1

Client Sample ID: WW14A-HUR-081812

Lab Sample ID: TC14970-1

Date Sampled: 08/18/12

Matrix: AQ - Ground Water

Date Received: 08/21/12

Method: SW846 8260B

Percent Solids: n/a

Project: Quarterly Well Sampling, Parker County, Texas

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Z028319.D	1	08/24/12	AK	n/a	n/a	VZ3732
Run #2							

Purge Volume

Run #1 5.0 ml

Run #2

Purgeable Aromatics

CAS No.	Compound	Result	MQL	SDL	Units	Q
71-43-2	Benzene	0.00025 U	0.0010	0.00025	mg/l	
108-88-3	Toluene	0.00026 U	0.0010	0.00026	mg/l	
100-41-4	Ethylbenzene	0.00025 U	0.0010	0.00025	mg/l	
1330-20-7	Xylene (total)	0.00071 U	0.0030	0.00071	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	104%		79-122%
17060-07-0	1,2-Dichloroethane-D4	96%		75-121%
2037-26-5	Toluene-D8	107%		87-119%
460-00-4	4-Bromofluorobenzene	113%		80-133%

U = Not detected SDL - Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Page 1 of 1

Client Sample ID: WW14A-HUR-081812	Date Sampled: 08/18/12
Lab Sample ID: TC14970-1	Date Received: 08/21/12
Matrix: AQ - Ground Water	Percent Solids: n/a
Method: RSKSOP-147/175	
Project: Quarterly Well Sampling, Parker County, Texas	

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	SS003618.D	1	08/27/12	LT	n/a	n/a	GSS178
Run #2	SS003621.D	10	08/27/12	LT	n/a	n/a	GSS178

RSK147 Special List

CAS No.	Compound	Result	MQL	SDL	Units	Q
74-82-8	Methane	0.914 ^a	0.0050	0.0030	mg/l	
74-85-1	Ethene	0.00050 U	0.0010	0.00050	mg/l	
74-84-0	Ethane	0.0423	0.0010	0.00050	mg/l	
74-98-6	Propane	0.00075 U	0.0015	0.00075	mg/l	
75-28-5	Isobutane	0.00075 U	0.0015	0.00075	mg/l	
106-97-8	Butane	0.00075 U	0.0015	0.00075	mg/l	

(a) Result is from Run# 2

U = Not detected SDL - Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Misc. Forms



Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody
- LRC Form

10165 Harwin Dr, Ste 150 Houston, TX 77036
TEL: 713-271-4700 FAX: 713-271-4770
www.acctest.com

Client / Reporting Information				Project Information												Requested Analyses												Matrix Codes																																								
Company Name EarthCon Consultants, Inc.				Project Name: Second Quarterly Well Sampling, Parker County, Texas												<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> BTEX 0260B Butane, Ethane, Ethene, Isobutane, Methane, Propane by RSK-175 </div> <div style="width: 45%; font-size: 0.8em;"> DW - Drinking Water GW - Ground Water WW - Water SW - Surface Water SO - Soil SL - Sludge SED - Sediment OI - Oil UQ - Other Liquid AIR - Air SOL - Other Solid WP - Wipe FB - Field Blank </div> </div>																																																				
Street Address 4800 Sugar Grove Blvd., Suite 390				Street State				Billing Information (if different from Report to)																																																												
City Stafford TX		Zip 77477		City State		Zip		Company Name																																																												
Project Contact Gabriela Floreslova		E-mail		Project #		Street Address																																																														
Phone # 281-201-3513		Fax #		Client Purchase Order #		City State		Zip																																																												
Sampler(s) Name(s) JULIE HELFRICH (512) 432-5385				Project Manager				Attention:																																																												
Collection																Number of preserved bottles																																																				
<table border="1" style="width:100%; border-collapse: collapse; font-size: 0.8em;"> <thead> <tr> <th>Field ID / Point of Collection</th> <th>Date</th> <th>Time</th> <th>Sampled By</th> <th>Matrix</th> <th># of bottles</th> <th>HCl</th> <th>HNO3</th> <th>Zn(NO3)2</th> <th>HNO3</th> <th>H2SO4</th> <th>HOAc</th> <th>DiWater</th> <th>MeOH</th> <th>TSP</th> <th>MHSAO4</th> <th>ENCOLE</th> <th>OTHER</th> </tr> </thead> <tbody> <tr> <td>WW4A-HUR-081812</td> <td>08/18/12</td> <td>1509</td> <td>JLH</td> <td>W</td> <td>18</td> <td>X</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>																Field ID / Point of Collection	Date	Time	Sampled By	Matrix	# of bottles	HCl	HNO3	Zn(NO3)2	HNO3	H2SO4	HOAc	DiWater	MeOH	TSP	MHSAO4	ENCOLE	OTHER	WW4A-HUR-081812	08/18/12	1509	JLH	W	18	X												<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> BTEX 0260B Butane, Ethane, Ethene, Isobutane, Methane, Propane by RSK-175 </div> <div style="width: 45%; font-size: 0.8em;"> DW - Drinking Water GW - Ground Water WW - Water SW - Surface Water SO - Soil SL - Sludge SED - Sediment OI - Oil UQ - Other Liquid AIR - Air SOL - Other Solid WP - Wipe FB - Field Blank </div> </div>																
Field ID / Point of Collection	Date	Time	Sampled By	Matrix	# of bottles	HCl	HNO3	Zn(NO3)2	HNO3	H2SO4	HOAc	DiWater	MeOH	TSP	MHSAO4	ENCOLE	OTHER																																																			
WW4A-HUR-081812	08/18/12	1509	JLH	W	18	X																																																														
Turnaround Time (Business days)																Data Deliverable Information																Comments / Special Instructions																																				
<input checked="" type="checkbox"/> Standard <input type="checkbox"/> 5 Day RUSH <input type="checkbox"/> 4 Day RUSH <input type="checkbox"/> 3 Day RUSH <input type="checkbox"/> 2 Day RUSH <input type="checkbox"/> 1 Day EMERGENCY Emergency & Rush T/A data available VIA Lablink																Approved By (Acctest PM): / Date: _____																<input type="checkbox"/> Commercial "A" (Level 1) <input type="checkbox"/> Commercial "B" (Level 2) <input type="checkbox"/> FULT1 (Level 3+4) <input type="checkbox"/> REDT1 (Level 3+4) <input type="checkbox"/> Commercial "C" Commercial "A" = Results Only Commercial "B" = Results + QC Summary Commercial "C" = Results + QC & Surrogate Summary																<input checked="" type="checkbox"/> TRRP <input type="checkbox"/> EDD Format <input type="checkbox"/> Other _____ extra volume for MS/MSD																				
Relinquished by: Julie Helfrich Date Time: 08/19/12 16:00																Relinquished by: JLH Date Time: 8/19/12																Relinquished by: JLH Date Time: 8/19/12																																				
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5.1

TC14970: Chain of Custody
Page 1 of 3

Accutest Laboratories Sample Receipt Summary

Page 1 of 2

Accutest Job Number: TC14970 Client: EARTHCON CONSULTANTS Project: 2ND QUARTERLY
 Date / Time Received: 8/21/2012 Delivery Method: FedEx Airbill #'s: 801561645028
 No. Coolers: 1 Therm ID: IRGUN5 Temp Adjustment Factor: -0.4
 Cooler Temps (Initial/Adjusted): #1: (2.3/1.9)

Cooler Security

	<u>Y</u>	<u>or</u>	<u>N</u>		<u>Y</u>	<u>or</u>	<u>N</u>
1. Custody Seals Present:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	3. COC Present:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
2. Custody Seals Intact:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	4. Smpl Dates/Time OK	<input checked="" type="checkbox"/>		<input type="checkbox"/>

Cooler Temperature

	<u>Y</u>	<u>or</u>	<u>N</u>
1. Temp criteria achieved:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
2. Cooler temp verification:			
3. Cooler media:	Ice (Bag)		

Quality Control Preservation

	<u>Y</u>	<u>or</u>	<u>N</u>	<u>N/A</u>	<u>WTB</u>	<u>STB</u>
1. Trip Blank present / cooler:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Trip Blank listed on COC:	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input type="checkbox"/>		
3. Samples preserved properly:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>		
4. VOCs headspace free:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>		

Sample Integrity - Documentation

	<u>Y</u>	<u>or</u>	<u>N</u>
1. Sample labels present on bottles:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
2. Container labeling complete:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
3. Sample container label / COC agree:	<input checked="" type="checkbox"/>		<input type="checkbox"/>

Sample Integrity - Condition

	<u>Y</u>	<u>or</u>	<u>N</u>
1. Sample recvd within HT:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
2. All containers accounted for:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
3. Condition of sample:	Intact		

Sample Integrity - Instructions

	<u>Y</u>	<u>or</u>	<u>N</u>	<u>N/A</u>
1. Analysis requested is clear:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
2. Bottles received for unspecified tests	<input type="checkbox"/>		<input checked="" type="checkbox"/>	
3. Sufficient volume recvd for analysis:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
4. Compositing instructions clear:	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>
5. Filtering instructions clear:	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>

Comments

5.1 5

TC14970: Chain of Custody
Page 2 of 3

Sample Receipt Log

Page 2 of 2

Job #: TC13879

Date / Time Received: 8/2/2012 9:50:00 AM

Initials: BG

Client: SPECTRA ENERGY

Cooler #	Sample ID:	Vol	Bot #	Location	Pres	pH	Therm ID	Initial Temp	Therm CF	Corrected Temp
1	TC13879-1	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-1	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-2	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-2	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-3	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-3	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-4	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-4	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-5	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-5	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-6	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-6	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1

5.1

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TC14970: Chain of Custody

Page 3 of 3

Appendix A Laboratory Data Package Cover Page

TC14970 This data package consists of

- ☐ This signature page, the laboratory review checklist, and the following reportable data:
- ☐ R1 Field chain-of-custody documentation;
- ☐ R2 Sample identification cross-reference;
- ☐ R3 Test reports (analytical data sheets) for each environmental sample that includes:
 - a) Items consistent with NELAC 5.13 or ISO/IEC 17025 Section 5.10
 - b) dilution factors,
 - c) preparation methods,
 - d) cleanup methods, and
 - e) if required for the project, tentatively identified compounds (TICs).
- ☐ R4 Surrogate recovery data including:
 - a) Calculated recovery (%R), and
 - b) The laboratory's surrogate QC limits.
- ☐ R5 Test reports/summary forms for blank samples;
- ☐ R6 Test reports/summary forms for laboratory control samples (LCSs) including:
 - a) LCS spiking amounts,
 - b) Calculated %R for each analyte, and
 - c) The laboratory's LCS QC limits.
- ☐ R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
 - a) Samples associated with the MS/MSD clearly identified,
 - b) MS/MSD spiking amounts,
 - c) Concentration of each MS/MSD analyte measured in the parent and
 - d) Calculated %Rs and relative percent differences (RPDs), and
 - e) The laboratory's MS/MSD QC limits
- ☐ R8 Laboratory analytical duplicate (if applicable) recovery and precision:
 - a) The amount of analyte measured in the duplicate,
 - b) The calculated RPD, and
 - c) The laboratory's QC limits for analytical duplicates.
- ☐ R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each
- ☐ R10 Other problems or anomalies.


The Exception Report for each "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Report. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratory in the Laboratory Review Checklist, and no information or data have been knowingly withheld.

Check, if applicable: This laboratory meets an exception under 30 TAC&25.6 and was last inspection by

☐ [X] TCEQ or ☐ _____ on April 2011. Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

QA Manager

Name (Printed)	Signature	Official Title (printed)	Date
Richard Rodriguez		Laboratory Director	8/29/2012

LABORATORY REVIEW CHECKLIST: REPORTABLE DATA									
Laboratory Name:		Accutest Gulf Coast		LRC Date:		8/29/2012			
Project Name:		Quarterly Well Sampling, Parker County, Texas		Laboratory Project Number:		TC14970			
Reviewer Name:		Anita Patel		Prep Batch Number(s):		GSS176, VZ3732			
# ¹	A ²	DESCRIPTION				YES	NO	NA ³	NR ⁴ ER # ⁵
R1	OI	CHAIN-OF-CUSTODY (C-O-C):							
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?				X			
		Were all departures from standard conditions described in an exception report?				X			
R2	OI	Sample and quality control (QC) identification							
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?				X			
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?				X			
R3	OI	Test reports							
		Were samples prepared and analyzed within holding times?				X			
		Other than those results <MQL, were all other raw values bracketed by calibration standards?				X			
		Were calculations checked by a peer or supervisor?				X			
		Were all analyte identifications checked by a peer or supervisor?				X			
		Were sample detection limits reported for all analytes not detected?				X			
		Were all results for soil and sediment samples reported on a dry weight basis?						X	
		Were % moisture (or solids) reported for all soil and sediment samples?						X	
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW846 Method 5035?						X	
		If required for the project, are TIC's reported?						X	
R4	O	Surrogate recovery data							
		Were surrogates added prior to extraction?				X			
		Were surrogate percent recoveries in all samples within the laboratory QC limits?				X			
R5	OI	Test reports/summary forms for blank samples							
		Were appropriate type(s) of blanks analyzed?				X			
		Were blanks analyzed at the appropriate frequency?				X			
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?				X			
		Were blank concentrations <MQL?				X			
R6	OI	Laboratory control samples (LCS):							
		Were all COCs included in the LCS?				X			
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?				X			
		Were LCSs analyzed at required frequency?				X			
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?				X			
		Does the detectability check sample data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?				X			5
		Was the LCSD RPD within QC limits?						X	
R7	OI	Matrix spike (MS) and matrix spike duplicate (MSD) data							
		Were the project/method specified analytes included in the MS and MSD?				X			
		Were MS/MSD analyzed at the appropriate frequency?				X			
		Were MS (and MSD, if applicable) %Rs within the laboratory QC Limits?						X	4
		Were the MS/MSD RPDs within laboratory QC limits?				X			
R8	OI	Analytical duplicate data							
		Were appropriate analytical duplicates analyzed for each matrix?				X			
		Were analytical duplicates analyzed at the appropriate frequency?				X			
		Were RPDs or relative standard deviations within the laboratory QC limits?				X			
R9	OI	Method quantitation limits (MQLs):							
		Are the MQLs for each method analyte included in the laboratory data package?				X			
		Do the MQLs correspond to the concentration of the lowest non-zero calibration				X			
		Are unadjusted MQLs and DCSs included in the laboratory data package?						X	2
R10	OI	Other problems/anomalies							
		Are all known problems/anomalies/special conditions noted in this LRC and ER?				X			
		Was applicable and available technology used to lower the SDL to minimize the				X			
		Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices, and methods associated with this laboratory data package?				X			3

Laboratory Name:		Accutest Gulf Coast	LRC Date:		8/29/2012	
Project Name:		Quarterly Well Sampling, Parker	Laboratory Project Number:		TC14970	
Reviewer Name:		Anita Patel	Prep Batch Number(s):		GSS178, VZ3732	
# ¹	A ²	DESCRIPTION	YES	NO	NA ³	NR ⁴ ER # ⁵
S1	OI	Initial calibration (ICAL)				
		Were response factors and/or relative response factors for each analyte within QC limits?	X			
		Were percent RSDs or correlation coefficient criteria met?	X			
		Was the number of standards recommended in the method used for all analytes?	X			
		Were all points generated between the lowest and highest standard used to calculate the curve?	X			
		Are ICAL data available for all instruments used?	X			
		Has the initial calibration curve been verified using an appropriate second source standard?	X			
S2	OI	Initial and continuing calibration verification (ICCV AND CCV) and continuing				
		Was the CCV analyzed at the method-required frequency?	X			
		Were percent differences for each analyte within the method-required QC limits?	X			
		Was the ICAL curve verified for each analyte?	X			
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?			X	
S3	O	Mass spectral tuning				
		Was the appropriate compound for the method used for tuning?	X			
		Were ion abundance data within the method-required QC limits?	X			
S4	O	Internal standards (IS)				
		Were IS area counts and retention times within the method-required QC limits?	X			
S5	OI	Raw data (NELAC Section 5.5.10)				
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X			
		Were data associated with manual integrations flagged on the raw data?	X			
S6	O	Dual column confirmation				
		Did dual column confirmation results meet the method-required QC?			X	
S7	O	Tentatively identified compounds (TICs):				
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X	
S8	I	Interference Check Sample (ICS) results				
		Were percent recoveries within method QC limits?			X	
S9	I	Serial dilutions, post digestion spikes, and method of standard additions				
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			X	
S10	OI	Method detection limit (MDL) studies				
		Was a MDL study performed for each reported analyte?	X			
		Is the MDL either adjusted or supported by the analysis of DCSs?	X			5
S11	OI	Proficiency test reports				
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X			
S12	OI	Standards documentation				
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate source?	X			
S13	OI	Compound/analyte identification procedures				
		Are the procedures for compound/analyte identification documented?	X			
S14	OI	Demonstration of analyst competency (DOC)				
		Was DOC conducted consistent with NELAC Chapter 5?	X			
		Is documentation of the analyst's competency up-to-date and on file?	X			
S15	OI	Verification/validation documentation for methods (NELAC Chapter 5)				
		Are all the methods used to generate the data documented, verified, and validated, where applicable?	X			
S16	OI	Laboratory standard operating procedures (SOPs)				
		Are laboratory SOPs current and on file for each method performed?	X			

LABORATORY REVIEW CHECKLIST (continued): Exception Reports			
Laboratory Name:		Accutest Gulf Coast	LRC Date:
			8/29/2012
Project Name:		Quarterly Well Sampling, Parker	Laboratory Project Number:
			TC14970
Reviewer Name:	Anita Patel	Prep Batch Number(s):	GSS178, VZ3732
ER# ¹	Description		
1	For reporting purposes, the MQL is defined in the report as the RL. The unadjusted MQL/RL is reported in the method blank. The SDL is defined in the report as the MDL.		
2	For reporting purposes, the method blank represents the unadjusted MQL. The DCS is on file in the laboratory and is not included in the laboratory data package.		
3	The laboratory is NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices, and methods associated with this laboratory data package for analytes that are listed in the Texas Fields of Accreditation.		
4	All anomalies are discussed in the case narrative.		
5	The Laboratory does not perform DCS analysis for Method RSKSOP-147/175. The components reported are not listed or do not have values in the Texas TRRP PCL tables.		

¹ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked on

5.2
5

GC/MS Volatiles



QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Page 1 of 1

Job Number: TC14970

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VZ3732-MB	Z028313.D	1	08/24/12	AK	n/a	n/a	VZ3732

The QC reported here applies to the following samples:

Method: SW846 8260B

TC14970-1

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.25	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.25	ug/l	
108-88-3	Toluene	ND	1.0	0.26	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.71	ug/l	

CAS No.	Surrogate Recoveries	Limits
1868-53-7	Dibromofluoromethane	106% 79-122%
17060-07-0	1,2-Dichloroethane-D4	98% 75-121%
2037-26-5	Toluene-D8	106% 87-119%
460-00-4	4-Bromofluorobenzene	114% 80-133%

6.1.1

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Blank Spike Summary

Page 1 of 1

Job Number: TC14970

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VZ3732-BS	Z028311.D	1	08/24/12	AK	n/a	n/a	VZ3732

The QC reported here applies to the following samples:

Method: SW846 8260B

TC14970-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2	Benzene	25	23.5	94	76-118
100-41-4	Ethylbenzene	25	23.6	94	75-112
108-88-3	Toluene	25	23.2	93	77-114
1330-20-7	Xylene (total)	75	70.6	94	75-111

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	99%	79-122%
17060-07-0	1,2-Dichloroethane-D4	90%	75-121%
2037-26-5	Toluene-D8	103%	87-119%
460-00-4	4-Bromofluorobenzene	109%	80-133%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: TC14970

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC14970-1MS	Z028320.D	1	08/24/12	AK	n/a	n/a	VZ3732
TC14970-1MSD	Z028321.D	1	08/24/12	AK	n/a	n/a	VZ3732
TC14970-1	Z028319.D	1	08/24/12	AK	n/a	n/a	VZ3732

The QC reported here applies to the following samples:

Method: SW846 8260B

TC14970-1

CAS No.	Compound	TC14970-1 ug/l	Spike Q	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	1.0 U	25	24.5	98	24.2	97	1	76-118/16
100-41-4	Ethylbenzene	1.0 U	25	24.7	99	23.7	95	4	75-112/12
108-88-3	Toluene	1.0 U	25	24.4	98	24.1	96	1	77-114/12
1330-20-7	Xylene (total)	3.0 U	75	74.1	99	72.6	97	2	75-111/12

CAS No.	Surrogate Recoveries	MS	MSD	TC14970-1	Limits
1868-53-7	Dibromofluoromethane	107%	106%	104%	79-122%
17060-07-0	1,2-Dichloroethane-D4	94%	93%	96%	75-121%
2037-26-5	Toluene-D8	107%	107%	107%	87-119%
460-00-4	4-Bromofluorobenzene	113%	113%	113%	80-133%

* = Outside of Control Limits.

GC Volatiles

QC Data Summaries

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Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Page 1 of 1

Job Number: TC14970

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GSS178-MB	SS003617.D	1	08/27/12	LT	n/a	n/a	GSS178

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC14970-1

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	ND	0.50	0.30	ug/l	
74-85-1	Ethene	ND	1.0	0.50	ug/l	
74-84-0	Ethane	ND	1.0	0.50	ug/l	
74-98-6	Propane	ND	1.5	0.75	ug/l	
75-28-5	Isobutane	ND	1.5	0.75	ug/l	
106-97-8	Butane	ND	1.5	0.75	ug/l	

7.1.1

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Blank Spike Summary

Page 1 of 1

Job Number: TC14970

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GSS178-BS	SS003615.D	1	08/27/12	LT	n/a	n/a	GSS178

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC14970-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
74-82-8	Methane	21.5	20.8	97	70-130
74-85-1	Ethene	57.4	58.2	101	70-130
74-84-0	Ethane	43.3	41.8	97	70-130
74-98-6	Propane	60.6	56.5	93	70-130
75-28-5	Isobutane	72.5	71.1	98	70-130
106-97-8	Butane	76.6	73.7	96	70-130

* = Outside of Control Limits.

Matrix Spike Summary

Page 1 of 1

Job Number: TC14970

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC14970-1MS	SS003620.D	1	08/27/12	LT	n/a	n/a	GSS178
TC14970-1	SS003618.D	1	08/27/12	LT	n/a	n/a	GSS178
TC14970-1	SS003621.D	10	08/27/12	LT	n/a	n/a	GSS178

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC14970-1

CAS No.	Compound	TC14970-1 ug/l	Spike Q	MS ug/l	MS %	Limits
74-82-8	Methane	914 ^b	21.5	600	-337* ^a	60-140
74-85-1	Ethene	1.0 U	57.4	58.8	102	60-140
74-84-0	Ethane	42.3	43.3	71.7	68	60-140
74-98-6	Propane	1.5 U	60.6	56.4	93	60-140
75-28-5	Isobutane	1.5 U	72.5	70.6	97	60-140
106-97-8	Butane	1.5 U	76.6	74.0	97	60-140

(a) Outside control limits due to high level in sample relative to spike amount.

(b) Result is from Run #2.

* = Outside of Control Limits.

Duplicate Summary

Page 1 of 1

Job Number: TC14970

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC14970-1DUP	SS003619.D	1	08/27/12	LT	n/a	n/a	GSS178
TC14970-1	SS003618.D	1	08/27/12	LT	n/a	n/a	GSS178
TC14970-1	SS003621.D	10	08/27/12	LT	n/a	n/a	GSS178

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC14970-1

CAS No.	Compound	TC14970-1		Q	RPD	Limits
		ug/l	DUP ug/l			
74-82-8	Methane	914 ^a	869	E	26	30
74-85-1	Ethene	1.0 U	ND		nc	30
74-84-0	Ethane	42.3	57.4		30	30
74-98-6	Propane	1.5 U	ND		nc	30
75-28-5	Isobutane	1.5 U	ND		nc	30
106-97-8	Butane	1.5 U	ND		nc	30

(a) Result is from Run #2.

* = Outside of Control Limits.

Lab #: 261145 Job #: 19036
 Sample Name/Number: WW14A-HUR-081812
 Company: Oil Tracers, LLC
 Date Sampled: 8/18/2012
 Container: Dissolved Gas Bottle
 Field/Site Name: Second Quarter Well Sampling
 Location: Parker County, TX
 Formation/Depth:
 Sampling Point:
 Date Received: 8/22/2012 Date Reported: 9/11/2012

Component	Chemical mol. %	$\delta^{13}\text{C}$ ‰	δD ‰	$\delta^{18}\text{O}$ ‰
Carbon Monoxide -----	nd			
Hydrogen Sulfide -----	na			
Helium -----	na			
Hydrogen -----	nd			
Argon -----	1.49			
Oxygen -----	0.039			
Nitrogen -----	86.10			
Carbon Dioxide -----	0.41			
Methane -----	11.72	-42.62	-130.8	
Ethane -----	0.242	-24.8		
Ethylene -----	nd			
Propane -----	nd			
Propylene -----	nd			
Iso-butane -----	nd			
N-butane -----	nd			
Iso-pentane -----	0.0007			
N-pentane -----	nd			
Hexanes + -----	0.0004			

Total BTU/cu.ft. dry @ 60deg F & 14.73psia, calculated: 123

Specific gravity, calculated: 0.927

Remarks:

Analysis is of gas extracted from water by headspace equilibration. Analysis has been corrected for helium added to create headspace. Helium dilution factor = 0.72

*Addition of helium negates the ability to detect native helium and may negate the ability to detect hydrogen.

** Ethane isotopes obtained online via GC-C-IRMS

nd = not detected. na = not analyzed. Isotopic composition of hydrogen is relative to VSMOW. Isotopic composition of carbon is relative to VPDB. Isotopic composition of oxygen is relative to VSMOW, except for carbon dioxide which is relative to VPDB. Calculations for BTU and specific gravity per ASTM D3588. Chemical compositions are normalized to 100%. Mol. % is approximately equal to vol. %.



08/31/12

Technical Report for

EarthCon Consultants

Quarterly Well Sampling, Parker County, Texas

2nd Quarter / WW15-HUR

Accutest Job Number: TC14959

Sampling Date: 08/18/12

Report to:

EarthCon Consultants
4800 Sugar Grove Suite 420
Stafford, TX 77477
gfloreslovo@earthcon.com; djackson@jacksonsjoberg.com;
mcpatton@rangeresources.com; escott@earthcon.com
ATTN: Gabriela Floreslovo

Total number of pages in report: 25



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.


Richard Rodriguez
Laboratory Director

Client Service contact: Elessa Sommers 713-271-4700

Certifications: TX (T104704220-12-8) AR (11-028-0) AZ (AZ0769) FL (E87628) KS (E-10366)
LA (85695/04004) OK (211-035)

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Test results relate only to samples analyzed.

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Sample Summary

EarthCon Consultants

Job No: TC14959

Quarterly Well Sampling, Parker County, Texas
Project No: 2nd Quarter / WW15-HUR

Sample Number	Collected Date	Time By	Received	Matrix Code Type	Client Sample ID
TC14959-1	08/18/12	16:20	08/21/12	AQ Ground Water	WW15-HUR-081812



SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: EarthCon Consultants

Job No TC14959

Site: Quarterly Well Sampling, Parker County, Texas

Report Date 8/31/2012 6:46:20 PM

1 Sample was collected on 08/18/2012 and received intact at Accutest on 08/21/2012 and properly preserved in 1 cooler at 1.9 Deg C. The sample received an Accutest job number of TC14959. A listing of the Laboratory Sample ID, Client Sample ID and date of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

Volatiles by GCMS By Method SW846 8260B

Matrix AQ	Batch ID: VK449
------------------	------------------------

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC14974-3MS, TC14974-3MSD were used as the QC samples indicated.

Volatiles by GC By Method RSKSOP-147/175

Matrix AQ	Batch ID: GSS178
------------------	-------------------------

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC14970-1DUP, TC14970-1MS were used as the QC samples indicated.
- Matrix Spike Recovery for Methane is outside control limits. Outside control limits due to high level in sample relative to spike amount.

Accutest Laboratories Gulf Coast (ALGC) certifies that this report meets the project requirements for analytical data produced for the samples as received at ALGC and as stated on the COC. ALGC certifies that the data meets the Data Quality Objectives for precision, accuracy and completeness as specified in the ALGC Quality Manual except as noted above. This report is to be used in its entirety. ALGC is not responsible for any assumptions of data quality if partial data packages are used

Summary of Hits

Page 1 of 1

Job Number: TC14959
Account: EarthCon Consultants
Project: Quarterly Well Sampling, Parker County, Texas
Collected: 08/18/12



Lab Sample ID Analyte	Client Sample ID	Result/ Qual	ML	SDL	Units	Method
TC14959-1	WW15-HUR-081812					
Methane		1.48	0.025	0.015	mg/l	RSKSOP-147/175
Ethane		0.154	0.0010	0.00050	mg/l	RSKSOP-147/175



Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	WW15-HUR-081812	Date Sampled:	08/18/12
Lab Sample ID:	TC14959-1	Date Received:	08/21/12
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260B		
Project:	Quarterly Well Sampling, Parker County, Texas		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	K10045.D	1	08/23/12	EM	n/a	n/a	VK449
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

Purgeable Aromatics

CAS No.	Compound	Result	MQL	SDL	Units	Q
71-43-2	Benzene	0.00025 U	0.0010	0.00025	mg/l	
108-88-3	Toluene	0.00026 U	0.0010	0.00026	mg/l	
100-41-4	Ethylbenzene	0.00025 U	0.0010	0.00025	mg/l	
1330-20-7	Xylene (total)	0.00071 U	0.0030	0.00071	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	101%		79-122%
17060-07-0	1,2-Dichloroethane-D4	95%		75-121%
2037-26-5	Toluene-D8	103%		87-119%
460-00-4	4-Bromofluorobenzene	124%		80-133%

U = Not detected SDL - Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: WW15-HUR-081812

Lab Sample ID: TC14959-1

Date Sampled: 08/18/12

Matrix: AQ - Ground Water

Date Received: 08/21/12

Method: RSKSOP-147/175

Percent Solids: n/a

Project: Quarterly Well Sampling, Parker County, Texas

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	SS003623.D	1	08/27/12	LT	n/a	n/a	GSS178
Run #2	SS003624.D	50	08/27/12	LT	n/a	n/a	GSS178

RSK147 Special List

CAS No.	Compound	Result	MLQ	SDL	Units	Q
74-82-8	Methane	1.48 ^a	0.025	0.015	mg/l	
74-85-1	Ethene	0.00050 U	0.0010	0.00050	mg/l	
74-84-0	Ethane	0.154	0.0010	0.00050	mg/l	
74-98-6	Propane	0.00075 U	0.0015	0.00075	mg/l	
75-28-5	Isobutane	0.00075 U	0.0015	0.00075	mg/l	
106-97-8	Butane	0.00075 U	0.0015	0.00075	mg/l	

(a) Result is from Run# 2

U = Not detected SDL - Sample Detection Limit
 MLQ = Method Quantitation Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Misc. Forms

5

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody
- LRC Form

Accutest Job Number: TC14959 Client: EARTHCON CONSULTANTS Project: 2ND QUATERLY
 Date / Time Received: 8/21/2012 Delivery Method: FedEx Airbill #'s: 801561645028
 No. Coolers: 1 Therm ID: IRGUN5 Temp Adjustment Factor: -0.4;
 Cooler Temps (Initial/Adjusted): #1: (2.3/1.9);

Cooler Security

	Y	or	N		Y	or	N
1. Custody Seals Present:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	3. COC Present:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
2. Custody Seals Intact:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	4. Smpl Dates/Time OK	<input checked="" type="checkbox"/>		<input type="checkbox"/>

Cooler Temperature

	Y	or	N
1. Temp criteria achieved:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
2. Cooler temp verification:			
3. Cooler media:	<u>Ice (Bag)</u>		

Quality Control Preservation

	Y	or	N	N/A	WTB	STB
1. Trip Blank present / cooler:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Trip Blank listed on COC:	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input type="checkbox"/>		
3. Samples preserved properly:	<input checked="" type="checkbox"/>		<input type="checkbox"/>			
4. VOCs headspace free:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>		

Sample Integrity - Documentation

	Y	or	N
1. Sample labels present on bottles:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
2. Container labeling complete:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
3. Sample container label / COC agree:	<input checked="" type="checkbox"/>		<input type="checkbox"/>

Sample Integrity - Condition

	Y	or	N
1. Sample recvd within HT:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
2. All containers accounted for:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
3. Condition of sample:	<u>Intact</u>		

Sample Integrity - Instructions

	Y	or	N	N/A
1. Analysis requested is clear:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
2. Bottles received for unspecified tests	<input type="checkbox"/>		<input checked="" type="checkbox"/>	
3. Sufficient volume recvd for analysis:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
4. Compositing instructions clear:	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>
5. Filtering instructions clear:	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>

Comments

 5.1
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TC14959: Chain of Custody
Page 2 of 3

Sample Receipt Log

Page 2 of 2

Job #: TC13879

Date / Time Received: 8/2/2012 9:50:00 AM

Initials: BG

Client: SPECTRA ENERGY

Cooler #	Sample ID:	Vol	Bot #	Location	Pres	pH	Therm ID	Initial Temp	Therm CF	Corrected Temp
1	TC13879-1	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-1	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-2	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-2	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-3	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-3	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-4	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-4	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-5	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-5	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-6	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-6	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1

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TC14959: Chain of Custody

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Appendix A Laboratory Data Package Cover Page

TC14959 This data package consists of

- ☐ This signature page, the laboratory review checklist, and the following reportable data:
- ☐ R1 Field chain-of-custody documentation;
- ☐ R2 Sample identification cross-reference;
- ☐ R3 Test reports (analytical data sheets) for each environmental sample that includes:
 - a) Items consistent with NELAC 5.13 or ISO/IEC 17025 Section 5.10
 - b) dilution factors,
 - c) preparation methods,
 - d) cleanup methods, and
 - e) if required for the project, tentatively identified compounds (TICs).
- ☐ R4 Surrogate recovery data including:
 - a) Calculated recovery (%R), and
 - b) The laboratory's surrogate QC limits.
- ☐ R5 Test reports/summary forms for blank samples;
- ☐ R6 Test reports/summary forms for laboratory control samples (LCSs) including:
 - a) LCS spiking amounts,
 - b) Calculated %R for each analyte, and
 - c) The laboratory's LCS QC limits.
- ☐ R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
 - a) Samples associated with the MS/MSD clearly identified,
 - b) MS/MSD spiking amounts,
 - c) Concentration of each MS/MSD analyte measured in the parent and
 - d) Calculated %Rs and relative percent differences (RPDs), and
 - e) The laboratory's MS/MSD QC limits
- ☐ R8 Laboratory analytical duplicate (if applicable) recovery and precision:
 - a) The amount of analyte measured in the duplicate,
 - b) The calculated RPD, and
 - c) The laboratory's QC limits for analytical duplicates.
- ☐ R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each
- ☐ R10 Other problems or anomalies.


The Exception Report for each "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Report. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratory in the Laboratory Review Checklist, and no information or data have been knowingly withheld.

Check, if applicable: This laboratory meets an exception under 30 TAC&25.6 and was last inspection by

☐ [X] TCEQ or ☐ _____ on April 2011. Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

QA Manager

Name (Printed)	Signature	Official Title (printed)	Date
Richard Rodriguez		Laboratory Director	8/29/2012

LABORATORY REVIEW CHECKLIST: REPORTABLE DATA									
Laboratory Name:		Accutest Gulf Coast Quarterly Well Sampling, Parker County, Texas		LRC Date:		8/29/2012			
Project Name:				Laboratory Project Number:		TC14959			
Reviewer Name:		Anita Patel		Prep Batch Number(s):		GSS178, VK449			
# ¹	A ²	DESCRIPTION				YES	NO	NA ³	NR ⁴ ER # ⁵
R1	OI	CHAIN-OF-CUSTODY (C-O-C):							
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?				X			
		Were all departures from standard conditions described in an exception report?				X			
R2	OI	Sample and quality control (QC) identification							
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?				X			
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?				X			
R3	OI	Test reports							
		Were samples prepared and analyzed within holding times?				X			
		Other than those results <MQL, were all other raw values bracketed by calibration standards?				X			
		Were calculations checked by a peer or supervisor?				X			
		Were all analyte identifications checked by a peer or supervisor?				X			
		Were sample detection limits reported for all analytes not detected?				X			
		Were all results for soil and sediment samples reported on a dry weight basis?						X	
		Were % moisture (or solids) reported for all soil and sediment samples?						X	
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW846 Method 5035?						X	
		If required for the project, are TIC's reported?						X	
R4	O	Surrogate recovery data							
		Were surrogates added prior to extraction?				X			
		Were surrogate percent recoveries in all samples within the laboratory QC limits?				X			
R5	OI	Test reports/summary forms for blank samples							
		Were appropriate type(s) of blanks analyzed?				X			
		Were blanks analyzed at the appropriate frequency?				X			
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?				X			
		Were blank concentrations <MQL?				X			
R6	OI	Laboratory control samples (LCS):							
		Were all COCs included in the LCS?				X			
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?				X			
		Were LCSs analyzed at required frequency?				X			
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?				X			
		Does the detectability check sample data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?				X			5
		Was the LCSD RPD within QC limits?						X	
R7	OI	Matrix spike (MS) and matrix spike duplicate (MSD) data							
		Were the project/method specified analytes included in the MS and MSD?				X			
		Were MS/MSD analyzed at the appropriate frequency?				X			
		Were MS (and MSD, if applicable) %Rs within the laboratory QC Limits?					X		4
		Were the MS/MSD RPDs within laboratory QC limits?				X			
R8	OI	Analytical duplicate data							
		Were appropriate analytical duplicates analyzed for each matrix?				X			
		Were analytical duplicates analyzed at the appropriate frequency?				X			
		Were RPDs or relative standard deviations within the laboratory QC limits?				X			
R9	OI	Method quantitation limits (MQLs):							
		Are the MQLs for each method analyte included in the laboratory data package?				X			
		Do the MQLs correspond to the concentration of the lowest non-zero calibration				X			
		Are unadjusted MQLs and DCSSs included in the laboratory data package?					X		2
R10	OI	Other problems/anomalies							
		Are all known problems/anomalies/special conditions noted in this LRC and ER?				X			
		Was applicable and available technology used to lower the SDL to minimize the				X			
		Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices, and methods associated with this laboratory data package?				X			3

Laboratory Name:		Accutest Gulf Coast	LRC Date:		8/29/2012	
Project Name:		Quarterly Well Sampling, Parker	Laboratory Project Number:		TC14959	
Reviewer Name:		Anita Patel	Prep Batch Number(s):		GSS178, VK449	
# ¹	A ²	DESCRIPTION	YES	NO	NA ³	NR ⁴ ER # ⁵
S1	OI	Initial calibration (ICAL)				
		Were response factors and/or relative response factors for each analyte within QC limits?	X			
		Were percent RSDs or correlation coefficient criteria met?	X			
		Was the number of standards recommended in the method used for all analytes?	X			
		Were all points generated between the lowest and highest standard used to calculate the curve?	X			
		Are ICAL data available for all instruments used?	X			
		Has the initial calibration curve been verified using an appropriate second source standard?	X			
S2	OI	Initial and continuing calibration verification (ICCV AND CCV) and continuing				
		Was the CCV analyzed at the method-required frequency?	X			
		Were percent differences for each analyte within the method-required QC limits?	X			
		Was the ICAL curve verified for each analyte?	X			
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?			X	
S3	O	Mass spectral tuning				
		Was the appropriate compound for the method used for tuning?	X			
		Were ion abundance data within the method-required QC limits?	X			
S4	O	Internal standards (IS)				
		Were IS area counts and retention times within the method-required QC limits?	X			
S5	OI	Raw data (NELAC Section 5.5.10)				
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X			
		Were data associated with manual integrations flagged on the raw data?	X			
S6	O	Dual column confirmation				
		Did dual column confirmation results meet the method-required QC?			X	
S7	O	Tentatively identified compounds (TICs):				
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X	
S8	I	Interference Check Sample (ICS) results				
		Were percent recoveries within method QC limits?			X	
S9	I	Serial dilutions, post digestion spikes, and method of standard additions				
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			X	
S10	OI	Method detection limit (MDL) studies				
		Was a MDL study performed for each reported analyte?	X			
		Is the MDL either adjusted or supported by the analysis of DCSs?	X			5
S11	OI	Proficiency test reports				
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X			
S12	OI	Standards documentation				
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate source?	X			
S13	OI	Compound/analyte identification procedures				
		Are the procedures for compound/analyte identification documented?	X			
S14	OI	Demonstration of analyst competency (DOC)				
		Was DOC conducted consistent with NELAC Chapter 5?	X			
		Is documentation of the analyst's competency up-to-date and on file?	X			
S15	OI	Verification/validation documentation for methods (NELAC Chapter 5)				
		Are all the methods used to generate the data documented, verified, and validated, where applicable?	X			
S16	OI	Laboratory standard operating procedures (SOPs)				
		Are laboratory SOPs current and on file for each method performed?	X			

LABORATORY REVIEW CHECKLIST (continued): Exception Reports			
Laboratory Name:		Accutest Gulf Coast	LRC Date:
Project Name:		Quarterly Well Sampling, Parker	Laboratory Project Number:
Reviewer Name:		Anita Patel	Prep Batch Number(s):
			GSS178, VK449
ER# ¹	Description		
1	For reporting purposes, the MQL is defined in the report as the RL. The unadjusted MQL/RL is reported in the method blank. The SDL is defined in the report as the MDL.		
2	For reporting purposes, the method blank represents the unadjusted MQL. The DCS is on file in the laboratory and is not included in the laboratory data package.		
3	The laboratory is NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices, and methods associated with this laboratory data package for analytes that are listed in the Texas Fields of Accreditation.		
4	All anomalies are discussed in the case narrative.		
5	The Laboratory does not perform DCS analysis for Method RSKSOP-147/175. The components reported are not listed or do not have values in the Texas TRRP PCL tables.		

¹ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked on

5.2
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GC/MS Volatiles



QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Page 1 of 1

Job Number: TC14959

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VK449-MB	K10026.D	1	08/23/12	EM	n/a	n/a	VK449

The QC reported here applies to the following samples:

Method: SW846 8260B

TC14959-1

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.25	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.25	ug/l	
108-88-3	Toluene	ND	1.0	0.26	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.71	ug/l	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	101%	79-122%
17060-07-0	1,2-Dichloroethane-D4	96%	75-121%
2037-26-5	Toluene-D8	102%	87-119%
460-00-4	4-Bromofluorobenzene	123%	80-133%

6.1.1

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Blank Spike Summary

Page 1 of 1

Job Number: TC14959

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VK449-BS	K10024.D	1	08/23/12	EM	n/a	n/a	VK449

The QC reported here applies to the following samples:

Method: SW846 8260B

TC14959-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2	Benzene	25	24.2	97	76-118
100-41-4	Ethylbenzene	25	25.2	101	75-112
108-88-3	Toluene	25	25.0	100	77-114
1330-20-7	Xylene (total)	75	76.6	102	75-111

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	99%	79-122%
17060-07-0	1,2-Dichloroethane-D4	95%	75-121%
2037-26-5	Toluene-D8	103%	87-119%
460-00-4	4-Bromofluorobenzene	123%	80-133%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: TC14959

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC14974-3MS	K10030.D	1	08/23/12	EM	n/a	n/a	VK449
TC14974-3MSD	K10031.D	1	08/23/12	EM	n/a	n/a	VK449
TC14974-3 ^a	K10029.D	1	08/23/12	EM	n/a	n/a	VK449

The QC reported here applies to the following samples:

Method: SW846 8260B

TC14959-1

CAS No.	Compound	TC14974-3 ug/l	Spike Q	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	1.0 U	25	24.1	96	23.3	93	3	76-118/16
100-41-4	Ethylbenzene	1.0 U	25	25.1	100	24.2	97	4	75-112/12
108-88-3	Toluene	1.0 U	25	24.8	99	23.8	95	4	77-114/12
1330-20-7	Xylene (total)	3.0 U	75	74.8	100	73.2	98	2	75-111/12

CAS No.	Surrogate Recoveries	MS	MSD	TC14974-3	Limits
1868-53-7	Dibromofluoromethane	99%	99%	100%	79-122%
17060-07-0	1,2-Dichloroethane-D4	96%	95%	96%	75-121%
2037-26-5	Toluene-D8	103%	102%	102%	87-119%
460-00-4	4-Bromofluorobenzene	122%	122%	121%	80-133%

(a) Sample was not preserved to a pH < 2

* = Outside of Control Limits.

GC Volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Page 1 of 1

Job Number: TC14959

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GSS178-MB	SS003617.D	1	08/27/12	LT	n/a	n/a	GSS178

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC14959-1

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	ND	0.50	0.30	ug/l	
74-85-1	Ethene	ND	1.0	0.50	ug/l	
74-84-0	Ethane	ND	1.0	0.50	ug/l	
74-98-6	Propane	ND	1.5	0.75	ug/l	
75-28-5	Isobutane	ND	1.5	0.75	ug/l	
106-97-8	Butane	ND	1.5	0.75	ug/l	

Blank Spike Summary

Page 1 of 1

Job Number: TC14959

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GSS178-BS	SS003615.D	1	08/27/12	LT	n/a	n/a	GSS178

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC14959-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
74-82-8	Methane	21.5	20.8	97	70-130
74-85-1	Ethene	57.4	58.2	101	70-130
74-84-0	Ethane	43.3	41.8	97	70-130
74-98-6	Propane	60.6	56.5	93	70-130
75-28-5	Isobutane	72.5	71.1	98	70-130
106-97-8	Butane	76.6	73.7	96	70-130

* = Outside of Control Limits.

Matrix Spike Summary

Page 1 of 1

Job Number: TC14959
Account: PESTXST EarthCon Consultants
Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC14970-1MS	SS003620.D	1	08/27/12	LT	n/a	n/a	GSS178
TC14970-1	SS003618.D	1	08/27/12	LT	n/a	n/a	GSS178
TC14970-1	SS003621.D	10	08/27/12	LT	n/a	n/a	GSS178

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC14959-1

CAS No.	Compound	TC14970-1 ug/l	Q	Spike ug/l	MS ug/l	MS %	Limits
74-82-8	Methane	914 ^b		21.5	600	-337* ^a	60-140
74-85-1	Ethene	1.0 U		57.4	58.8	102	60-140
74-84-0	Ethane	42.3		43.3	71.7	68	60-140
74-98-6	Propane	1.5 U		60.6	56.4	93	60-140
75-28-5	Isobutane	1.5 U		72.5	70.6	97	60-140
106-97-8	Butane	1.5 U		76.6	74.0	97	60-140

(a) Outside control limits due to high level in sample relative to spike amount.

(b) Result is from Run #2.

* = Outside of Control Limits.

Duplicate Summary

Page 1 of 1

Job Number: TC14959

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC14970-1DUP	SS003619.D	1	08/27/12	LT	n/a	n/a	GSS178
TC14970-1	SS003618.D	1	08/27/12	LT	n/a	n/a	GSS178
TC14970-1	SS003621.D	10	08/27/12	LT	n/a	n/a	GSS178

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC14959-1

CAS No.	Compound	TC14970-1 ug/l	DUP Q ug/l	Q	RPD	Limits
74-82-8	Methane	914 ^a	869	E	26	30
74-85-1	Ethene	1.0 U	ND		nc	30
74-84-0	Ethane	42.3	57.4		30	30
74-98-6	Propane	1.5 U	ND		nc	30
75-28-5	Isobutane	1.5 U	ND		nc	30
106-97-8	Butane	1.5 U	ND		nc	30

(a) Result is from Run #2.

* = Outside of Control Limits.

Lab #: 261146 Job #: 19036
 Sample Name/Number: WW15-HUR-081812
 Company: Oil Tracers, LLC
 Date Sampled: 8/18/2012
 Container: Dissolved Gas Bottle
 Field/Site Name: Second Quarter Well Sampling
 Location: Parker County, TX
 Formation/Depth:
 Sampling Point:
 Date Received: 8/22/2012 Date Reported: 9/11/2012

Component	Chemical mol. %	$\delta^{13}\text{C}$ ‰	δD ‰	$\delta^{18}\text{O}$ ‰
Carbon Monoxide -----	nd			
Hydrogen Sulfide -----	na			
Helium -----	na			
Hydrogen -----	nd			
Argon -----	1.40			
Oxygen -----	0.036			
Nitrogen -----	75.30			
Carbon Dioxide -----	0.28			
Methane -----	22.20	-45.91	-160.2	
Ethane -----	0.776	-29.9		
Ethylene -----	nd			
Propane -----	nd			
Propylene -----	nd			
Iso-butane -----	nd			
N-butane -----	0.0036			
Iso-pentane -----	nd			
N-pentane -----	nd			
Hexanes + -----	0.0004			

Total BTU/cu.ft. dry @ 60deg F & 14.73psia, calculated: 239

Specific gravity, calculated: 0.883

Remarks:

Analysis is of gas extracted from water by headspace equilibration. Analysis has been corrected for helium added to create headspace. Helium dilution factor = 0.74

*Addition of helium negates the ability to detect native helium and may negate the ability to detect hydrogen.

** Ethane isotopes obtained online via GC-C-IRMS

nd = not detected. na = not analyzed. Isotopic composition of hydrogen is relative to VSMOW. Isotopic composition of carbon is relative to VPDB. Isotopic composition of oxygen is relative to VSMOW, except for carbon dioxide which is relative to VPDB. Calculations for BTU and specific gravity per ASTM D3588. Chemical compositions are normalized to 100%. Mol. % is approximately equal to vol. %.



Reissue #1
09/06/12

Technical Report for

EarthCon Consultants

Quarterly Well Sampling, Parker County, Texas

2nd Quarter / WW25-MAT

Accutest Job Number: TC14955

Sampling Date: 08/17/12

Report to:

EarthCon Consultants
4800 Sugar Grove Suite 420
Stafford, TX 77477
gfloreslovo@earthcon.com; djackson@jacksonsjoberg.com;
mcpatton@rangeresources.com; escott@earthcon.com
ATTN: Gabriela Floreslovo

Total number of pages in report: **26**



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.


Richard Rodriguez
Laboratory Director

Client Service contact: Elessa Sommers 713-271-4700

Certifications: TX (T104704220-12-8) AR (11-028-0) AZ (AZ0769) FL (E87628) KS (E-10366)
LA (85695/04004) OK (211-035)

This report shall not be reproduced, except in its entirety, without the written approval of Accutest Laboratories.
Test results relate only to samples analyzed.



Gulf Coast. Inc.

10165 Harwin Drive
Houston, TX 77036
Tel: 713-271-4700

www.accutest.com

Thursday, September 06, 2012

EarthCon Consultants
4800 Sugar Grove, Suite 420
Stafford, TX 77477
ATTN: Gabriela Floreslovo

RE: Accutest job TC14955 Reissue

Dear Ms. Floreslovo:

The final report for job number TC14955 has been revised to identify the sampling event as 2nd Quarter.

Please feel free to contact me if I can be of further assistance.

Sincerely,

Elessa Sommers

Elessa Sommers
Project Manager

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Sample Summary

EarthCon Consultants

Job No: TC14955

Quarterly Well Sampling, Parker County, Texas
Project No: 2nd Quarter / WW25-MAT

Sample Number	Collected		Time By	Received	Matrix		Client Sample ID
	Date				Code	Type	
TC14955-1	08/17/12	15:10		08/21/12	AQ	Ground Water	WW25-MAT-081712



SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: EarthCon Consultants

Job No TC14955

Site: Quarterly Well Sampling, Parker County, Texas

Report Date 8/31/2012 6:43:59 PM

1 Sample was collected on 08/17/2012 and received intact at Accutest on 08/21/2012 and properly preserved in 1 cooler at 2.4 Deg C. The sample received an Accutest job number of TC14955. A listing of the Laboratory Sample ID, Client Sample ID and date of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

Volatiles by GCMS By Method SW846 8260B

Matrix AQ	Batch ID: VK449
------------------	------------------------

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC14974-3MS, TC14974-3MSD were used as the QC samples indicated.

Volatiles by GC By Method RSKSOP-147/175

Matrix AQ	Batch ID: GSS177
------------------	-------------------------

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC15158-1MS, TC15158-2DUP were used as the QC samples indicated.

Accutest Laboratories Gulf Coast (ALGC) certifies that this report meets the project requirements for analytical data produced for the samples as received at ALGC and as stated on the COC. ALGC certifies that the data meets the Data Quality Objectives for precision, accuracy and completeness as specified in the ALGC Quality Manual except as noted above. This report is to be used in its entirety. ALGC is not responsible for any assumptions of data quality if partial data packages are used

Summary of Hits

Page 1 of 1

Job Number: TC14955
Account: EarthCon Consultants
Project: Quarterly Well Sampling, Parker County, Texas
Collected: 08/17/12



Lab Sample ID Analyte	Client Sample ID	Result/ Qual	MQL	SDL	Units	Method
TC14955-1	WW25-MAT-081712					
Methane		0.507	0.0050	0.0030	mg/l	RSKSOP-147/175
Ethane		0.0240	0.0010	0.00050	mg/l	RSKSOP-147/175



4

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	WW25-MAT-081712	Date Sampled:	08/17/12
Lab Sample ID:	TC14955-1	Date Received:	08/21/12
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260B		
Project:	Quarterly Well Sampling, Parker County, Texas		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	K10043.D	1	08/23/12	EM	n/a	n/a	VK449
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

Purgeable Aromatics

CAS No.	Compound	Result	MQL	SDL	Units	Q
71-43-2	Benzene	0.00025 U	0.0010	0.00025	mg/l	
108-88-3	Toluene	0.00026 U	0.0010	0.00026	mg/l	
100-41-4	Ethylbenzene	0.00025 U	0.0010	0.00025	mg/l	
1330-20-7	Xylene (total)	0.00071 U	0.0030	0.00071	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	99%		79-122%
17060-07-0	1,2-Dichloroethane-D4	94%		75-121%
2037-26-5	Toluene-D8	104%		87-119%
460-00-4	4-Bromofluorobenzene	122%		80-133%

U = Not detected SDL - Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: WW25-MAT-081712	Date Sampled: 08/17/12
Lab Sample ID: TC14955-1	Date Received: 08/21/12
Matrix: AQ - Ground Water	Percent Solids: n/a
Method: RSKSOP-147/175	
Project: Quarterly Well Sampling, Parker County, Texas	

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	SS003607.D	1	08/25/12	LT	n/a	n/a	GSS177
Run #2	SS003610.D	10	08/25/12	LT	n/a	n/a	GSS177

RSK147 Special List

CAS No.	Compound	Result	MQL	SDL	Units	Q
74-82-8	Methane	0.507 ^a	0.0050	0.0030	mg/l	
74-85-1	Ethene	0.00050 U	0.0010	0.00050	mg/l	
74-84-0	Ethane	0.0240	0.0010	0.00050	mg/l	
74-98-6	Propane	0.00075 U	0.0015	0.00075	mg/l	
75-28-5	Isobutane	0.00075 U	0.0015	0.00075	mg/l	
106-97-8	Butane	0.00075 U	0.0015	0.00075	mg/l	

(a) Result is from Run# 2

U = Not detected SDL - Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Misc. Forms

5

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody
- LRC Form

Accutest Job Number: TC14955 Client: EARTHCON CONSULTANTS Project: 2ND QUARTERLY
 Date / Time Received: 8/21/2012 Delivery Method: FedEx Airbill #: 795765167616
 No. Coolers: 1 Therm ID: IRGUN5; Temp Adjustment Factor: -0.4;
 Cooler Temps (Initial/Adjusted): #1: (2.8/2.4);

Cooler Security

	Y or N			Y or N	
1. Custody Seals Present:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3. COC Present:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Custody Seals Intact:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	4. Smpl Dates/Time OK	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Cooler Temperature

	Y or N	
1. Temp criteria achieved:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Cooler temp verification:		
3. Cooler media:	Ice (Bag)	

Quality Control Preservation

	Y or N			N/A		WTB STB	
1. Trip Blank present / cooler:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
2. Trip Blank listed on COC:	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>				
3. Samples preserved properly:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				
4. VOCs headspace free:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				

Sample Integrity - Documentation

	Y or N	
1. Sample labels present on bottles:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Container labeling complete:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3. Sample container label / COC agree:	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Sample Integrity - Condition

	Y or N	
1. Sample recvd within HT:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. All containers accounted for:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3. Condition of sample:	Intact	

Sample Integrity - Instructions

	Y or N		N/A
1. Analysis requested is clear:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
2. Bottles received for unspecified tests	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
3. Sufficient volume recvd for analysis:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
4. Compositing instructions clear:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5. Filtering instructions clear:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Comments

TC14955: Chain of Custody
 Page 2 of 3

Sample Receipt Log

Page 2 of 2

 Job #: TC13879

 Date / Time Received: 8/2/2012 9:50:00 AM

 Initials: BG

 Client: SPECTRA ENERGY

Cooler #	Sample ID:	Vol	Bot #	Location	Pres	pH	Therm ID	Initial Temp	Therm CF	Corrected Temp
1	TC13879-1	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-1	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-2	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-2	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-3	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-3	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-4	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-4	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-5	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-5	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-6	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-6	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1

 5.1
 5

TC14955: Chain of Custody
Page 3 of 3

Appendix A Laboratory Data Package Cover Page

TC14955 This data package consists of

- ☐ This signature page, the laboratory review checklist, and the following reportable data:
- ☐ R1 Field chain-of-custody documentation;
- ☐ R2 Sample identification cross-reference;
- ☐ R3 Test reports (analytical data sheets) for each environmental sample that includes:
 - a) Items consistent with NELAC 5.13 or ISO/IEC 17025 Section 5.10
 - b) dilution factors,
 - c) preparation methods,
 - d) cleanup methods, and
 - e) if required for the project, tentatively identified compounds (TICs).
- ☐ R4 Surrogate recovery data including:
 - a) Calculated recovery (%R), and
 - b) The laboratory's surrogate QC limits.
- ☐ R5 Test reports/summary forms for blank samples;
- ☐ R6 Test reports/summary forms for laboratory control samples (LCSs) including:
 - a) LCS spiking amounts,
 - b) Calculated %R for each analyte, and
 - c) The laboratory's LCS QC limits.
- ☐ R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
 - a) Samples associated with the MS/MSD clearly identified,
 - b) MS/MSD spiking amounts,
 - c) Concentration of each MS/MSD analyte measured in the parent and
 - d) Calculated %Rs and relative percent differences (RPDs), and
 - e) The laboratory's MS/MSD QC limits
- ☐ R8 Laboratory analytical duplicate (if applicable) recovery and precision:
 - a) The amount of analyte measured in the duplicate,
 - b) The calculated RPD, and
 - c) The laboratory's QC limits for analytical duplicates.
- ☐ R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each
- ☐ R10 Other problems or anomalies.

The Exception Report for each "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Report. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratory in the Laboratory Review Checklist, and no information or data have been knowingly withheld.

Check, if applicable: This laboratory meets an exception under 30 TAC&25.6 and was last inspection by

☐ [X] TCEQ or ☐ _____ on April 2011. Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

QA Manager

Name (Printed)

Signature

Official Title (printed)

Date

Richard Rodriguez



Laboratory Director

8/29/2012

LABORATORY REVIEW CHECKLIST: REPORTABLE DATA									
Laboratory Name:		Accutest Gulf Coast		LRC Date:		8/29/2012			
Project Name:		Quarterly Well Sampling, Parker County, Texas		Laboratory Project Number:		TC14955			
Reviewer Name:		Anita Patel		Prep Batch Number(s):		GSS177, VK449			
# ¹	A ²	DESCRIPTION				YES	NO	NA ³	NR ⁴ ER # ⁵
R1	OI	CHAIN-OF-CUSTODY (C-O-C):							
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?				X			
		Were all departures from standard conditions described in an exception report?				X			
R2	OI	Sample and quality control (QC) identification							
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?				X			
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?				X			
R3	OI	Test reports							
		Were samples prepared and analyzed within holding times?				X			
		Other than those results <MQL, were all other raw values bracketed by calibration standards?				X			
		Were calculations checked by a peer or supervisor?				X			
		Were all analyte identifications checked by a peer or supervisor?				X			
		Were sample detection limits reported for all analytes not detected?				X			
		Were all results for soil and sediment samples reported on a dry weight basis?						X	
		Were % moisture (or solids) reported for all soil and sediment samples?						X	
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW846 Method 5035?						X	
		If required for the project, are TIC's reported?						X	
R4	O	Surrogate recovery data							
		Were surrogates added prior to extraction?				X			
		Were surrogate percent recoveries in all samples within the laboratory QC limits?				X			
R5	OI	Test reports/summary forms for blank samples							
		Were appropriate type(s) of blanks analyzed?				X			
		Were blanks analyzed at the appropriate frequency?				X			
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?				X			
		Were blank concentrations <MQL?				X			
R6	OI	Laboratory control samples (LCS):							
		Were all COCs included in the LCS?				X			
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?				X			
		Were LCSs analyzed at required frequency?				X			
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?				X			
		Does the detectability check sample data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?				X			2
		Was the LCSD RPD within QC limits?						X	
R7	OI	Matrix spike (MS) and matrix spike duplicate (MSD) data							
		Were the project/method specified analytes included in the MS and MSD?				X			
		Were MS/MSD analyzed at the appropriate frequency?				X			
		Were MS (and MSD, if applicable) %Rs within the laboratory QC Limits?				X			
		Were the MS/MSD RPDs within laboratory QC limits?				X			
R8	OI	Analytical duplicate data							
		Were appropriate analytical duplicates analyzed for each matrix?				X			
		Were analytical duplicates analyzed at the appropriate frequency?				X			
		Were RPDs or relative standard deviations within the laboratory QC limits?				X			
R9	OI	Method quantitation limits (MQLs):							
		Are the MQLs for each method analyte included in the laboratory data package?				X			
		Do the MQLs correspond to the concentration of the lowest non-zero calibration				X			
		Are unadjusted MQLs and DCSS included in the laboratory data package?					X		3
R10	OI	Other problems/anomalies							
		Are all known problems/anomalies/special conditions noted in this LRC and ER?				X			
		Was applicable and available technology used to lower the SDL to minimize the				X			
		Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices, and methods associated with this laboratory data package?				X			4

Laboratory Name:		Accutest Gulf Coast	LRC Date:		8/29/2012	
Project Name:		Quarterly Well Sampling, Parker	Laboratory Project Number:		TC14955	
Reviewer Name:		Anita Patel	Prep Batch Number(s):		GSS177, VK449	
# ¹	A ²	DESCRIPTION	YES	NO	NA ³	NR ⁴ ER # ⁵
S1	OI	Initial calibration (ICAL)				
		Were response factors and/or relative response factors for each analyte within QC limits?	X			
		Were percent RSDs or correlation coefficient criteria met?	X			
		Was the number of standards recommended in the method used for all analytes?	X			
		Were all points generated between the lowest and highest standard used to calculate the curve?	X			
		Are ICAL data available for all instruments used?	X			
		Has the initial calibration curve been verified using an appropriate second source standard?	X			
S2	OI	Initial and continuing calibration verification (ICCV AND CCV) and continuing				
		Was the CCV analyzed at the method-required frequency?	X			
		Were percent differences for each analyte within the method-required QC limits?	X			
		Was the ICAL curve verified for each analyte?	X			
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?			X	
S3	O	Mass spectral tuning				
		Was the appropriate compound for the method used for tuning?	X			
		Were ion abundance data within the method-required QC limits?	X			
S4	O	Internal standards (IS)				
		Were IS area counts and retention times within the method-required QC limits?	X			
S5	OI	Raw data (NELAC Section 5.5.10)				
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X			
		Were data associated with manual integrations flagged on the raw data?	X			
S6	O	Dual column confirmation				
		Did dual column confirmation results meet the method-required QC?			X	
S7	O	Tentatively identified compounds (TICs):				
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X	
S8	I	Interference Check Sample (ICS) results				
		Were percent recoveries within method QC limits?			X	
S9	I	Serial dilutions, post digestion spikes, and method of standard additions				
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			X	
S10	OI	Method detection limit (MDL) studies				
		Was a MDL study performed for each reported analyte?	X			
		Is the MDL either adjusted or supported by the analysis of DCSs?	X			2
S11	OI	Proficiency test reports				
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X			
S12	OI	Standards documentation				
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate source?	X			
S13	OI	Compound/analyte identification procedures				
		Are the procedures for compound/analyte identification documented?	X			
S14	OI	Demonstration of analyst competency (DOC)				
		Was DOC conducted consistent with NELAC Chapter 5?	X			
		Is documentation of the analyst's competency up-to-date and on file?	X			
S15	OI	Verification/validation documentation for methods (NELAC Chapter 5)				
		Are all the methods used to generate the data documented, verified, and validated, where applicable?	X			
S16	OI	Laboratory standard operating procedures (SOPs)				
		Are laboratory SOPs current and on file for each method performed?	X			

LABORATORY REVIEW CHECKLIST (continued): Exception Reports			
Laboratory Name:	Accutest Gulf Coast	LRC Date:	8/29/2012
Project Name:	Quarterly Well Sampling, Parker	Laboratory Project Number:	TC14955
Reviewer Name:	Anita Patel	Prep Batch Number(s):	GSS177, VK449
ER# ¹	Description		
1	For reporting purposes, the MQL is defined in the report as the RL. The unadjusted MQL/RL is reported in the method blank. The SDL is defined in the report as the MDL.		
2	The Laboratory does not perform DCS analysis for Method RSKSOP-147/175. The components reported are not listed or do not have values in the Texas TRRP PCL tables.		
3	For reporting purposes, the method blank represents the unadjusted MQL. The DCS is on file in the laboratory and is not included in the laboratory data package.		
4	The laboratory is NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices, and methods associated with this laboratory data package for analytes that are listed in the Texas Fields of Accreditation.		

1ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked on

GC/MS Volatiles



QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Page 1 of 1

Job Number: TC14955
Account: PESTXST EarthCon Consultants
Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VK449-MB	K10026.D	1	08/23/12	EM	n/a	n/a	VK449

The QC reported here applies to the following samples:

Method: SW846 8260B

TC14955-1

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.25	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.25	ug/l	
108-88-3	Toluene	ND	1.0	0.26	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.71	ug/l	

CAS No.	Surrogate Recoveries	Limits
1868-53-7	Dibromofluoromethane	101% 79-122%
17060-07-0	1,2-Dichloroethane-D4	96% 75-121%
2037-26-5	Toluene-D8	102% 87-119%
460-00-4	4-Bromofluorobenzene	123% 80-133%

6.1.1

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Blank Spike Summary

Page 1 of 1

Job Number: TC14955

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VK449-BS	K10024.D	1	08/23/12	EM	n/a	n/a	VK449

The QC reported here applies to the following samples:

Method: SW846 8260B

TC14955-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2	Benzene	25	24.2	97	76-118
100-41-4	Ethylbenzene	25	25.2	101	75-112
108-88-3	Toluene	25	25.0	100	77-114
1330-20-7	Xylene (total)	75	76.6	102	75-111

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	99%	79-122%
17060-07-0	1,2-Dichloroethane-D4	95%	75-121%
2037-26-5	Toluene-D8	103%	87-119%
460-00-4	4-Bromofluorobenzene	123%	80-133%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: TC14955

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC14974-3MS	K10030.D	1	08/23/12	EM	n/a	n/a	VK449
TC14974-3MSD	K10031.D	1	08/23/12	EM	n/a	n/a	VK449
TC14974-3 ^a	K10029.D	1	08/23/12	EM	n/a	n/a	VK449

The QC reported here applies to the following samples:

Method: SW846 8260B

TC14955-1

CAS No.	Compound	TC14974-3 ug/l	Spike Q	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	1.0 U	25	24.1	96	23.3	93	3	76-118/16
100-41-4	Ethylbenzene	1.0 U	25	25.1	100	24.2	97	4	75-112/12
108-88-3	Toluene	1.0 U	25	24.8	99	23.8	95	4	77-114/12
1330-20-7	Xylene (total)	3.0 U	75	74.8	100	73.2	98	2	75-111/12

CAS No.	Surrogate Recoveries	MS	MSD	TC14974-3	Limits
1868-53-7	Dibromofluoromethane	99%	99%	100%	79-122%
17060-07-0	1,2-Dichloroethane-D4	96%	95%	96%	75-121%
2037-26-5	Toluene-D8	103%	102%	102%	87-119%
460-00-4	4-Bromofluorobenzene	122%	122%	121%	80-133%

(a) Sample was not preserved to a pH < 2

* = Outside of Control Limits.

GC Volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

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Method Blank Summary

Page 1 of 1

Job Number: TC14955

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GSS177-MB	SS003589.D	1	08/25/12	LT	n/a	n/a	GSS177

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC14955-1

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	ND	0.50	0.30	ug/l	
74-85-1	Ethene	ND	1.0	0.50	ug/l	
74-84-0	Ethane	ND	1.0	0.50	ug/l	
74-98-6	Propane	ND	1.5	0.75	ug/l	
75-28-5	Isobutane	ND	1.5	0.75	ug/l	
106-97-8	Butane	ND	1.5	0.75	ug/l	

7.1.1

7

Blank Spike Summary

Page 1 of 1

Job Number: TC14955

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GSS177-BS	SS003587.D	1	08/25/12	LT	n/a	n/a	GSS177

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC14955-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
74-82-8	Methane	21.5	23.5	109	70-130
74-85-1	Ethene	57.4	56.9	99	70-130
74-84-0	Ethane	43.3	40.8	94	70-130
74-98-6	Propane	60.6	56.5	93	70-130
75-28-5	Isobutane	72.5	66.3	92	70-130
106-97-8	Butane	76.6	65.5	86	70-130

* = Outside of Control Limits.

Matrix Spike Summary

Page 1 of 1

Job Number: TC14955

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC15158-1MS	SS003591.D	1	08/25/12	LT	n/a	n/a	GSS177
TC15158-1	SS003590.D	1	08/25/12	LT	n/a	n/a	GSS177

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC14955-1

CAS No.	Compound	TC15158-1 ug/l	Spike Q	MS ug/l	MS %	Limits
74-82-8	Methane	ND	21.5	17.0	79	60-140
74-85-1	Ethene	ND	57.4	43.9	76	60-140
74-84-0	Ethane	ND	43.3	31.2	72	60-140
74-98-6	Propane	ND	60.6	44.4	73	60-140
75-28-5	Isobutane	ND	72.5	48.5	67	60-140
106-97-8	Butane	ND	76.6	48.7	64	60-140

* = Outside of Control Limits.

Duplicate Summary

Page 1 of 1

Job Number: TC14955

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC15158-2DUP	SS003593.D	1	08/25/12	LT	n/a	n/a	GSS177
TC15158-2	SS003592.D	1	08/25/12	LT	n/a	n/a	GSS177

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC14955-1

CAS No.	Compound	TC15158-2		DUP		RPD	Limits
		ug/l	Q	ug/l	Q		
74-82-8	Methane	ND		ND		nc	30
74-85-1	Ethene	ND		ND		nc	30
74-84-0	Ethane	ND		ND		nc	30
74-98-6	Propane	ND		ND		nc	30
75-28-5	Isobutane	ND		ND		nc	30
106-97-8	Butane	ND		ND		nc	30

* = Outside of Control Limits.

ANALYSIS REPORT

Lab #: 261139 Job #: 19036
 Sample Name/Number: WW25-MAT-081712
 Company: Oil Tracers, LLC
 Date Sampled: 8/17/2012
 Container: Dissolved Gas Bottle
 Field/Site Name: Second Quarter Well Sampling
 Location: Parker County, TX
 Formation/Depth:
 Sampling Point:
 Date Received: 8/22/2012 Date Reported: 9/11/2012

Component	Chemical mol. %	$\delta^{13}\text{C}$ ‰	δD ‰	$\delta^{18}\text{O}$ ‰
Carbon Monoxide -----	nd			
Hydrogen Sulfide -----	na			
Helium -----	na			
Hydrogen -----	nd			
Argon -----	1.38			
Oxygen -----	0.43			
Nitrogen -----	82.39			
Carbon Dioxide -----	0.19			
Methane -----	15.26	-44.70	-135.7	
Ethane -----	0.306	-27.0		
Ethylene -----	nd			
Propane -----	0.0276			
Propylene -----	nd			
Iso-butane -----	0.0047			
N-butane -----	0.0062			
Iso-pentane -----	0.0008			
N-pentane -----	nd			
Hexanes + -----	0.0012			

Total BTU/cu.ft. dry @ 60deg F & 14.73psia, calculated: 161

Specific gravity, calculated: 0.912

Remarks:

Analysis is of gas extracted from water by headspace equilibration. Analysis has been corrected for helium added to create headspace. Helium dilution factor = 0.74

*Addition of helium negates the ability to detect native helium and may negate the ability to detect hydrogen.

** Ethane isotopes obtained online via GC-C-IRMS

nd = not detected. na = not analyzed. Isotopic composition of hydrogen is relative to VSMOW. Isotopic composition of carbon is relative to VPDB. Isotopic composition of oxygen is relative to VSMOW, except for carbon dioxide which is relative to VPDB. Calculations for BTU and specific gravity per ASTM D3588. Chemical compositions are normalized to 100%. Mol. % is approximately equal to vol. %.



08/31/12

Technical Report for

EarthCon Consultants

Quarterly Well Sampling, Parker County, Texas

2nd Quarter / WW07-MER

Accutest Job Number: TC14967

Sampling Date: 08/18/12

Report to:

EarthCon Consultants
4800 Sugar Grove Suite 420
Stafford, TX 77477
gfloreslovo@earthcon.com; djackson@jacksonsjoberg.com;
mcpatton@rangeresources.com; escott@earthcon.com
ATTN: Gabriela Floreslovo

Total number of pages in report: **25**



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.


Richard Rodriguez
Laboratory Director

Client Service contact: Elessa Sommers 713-271-4700

Certifications: TX (T104704220-12-8) AR (11-028-0) AZ (AZ0769) FL (E87628) KS (E-10366)
LA (85695/04004) OK (211-035)

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Test results relate only to samples analyzed.

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Sample Summary

EarthCon Consultants

Job No: TC14967

Quarterly Well Sampling, Parker County, Texas
Project No: 2nd Quarter / WW07-MER

Sample Number	Collected		Matrix		Client Sample ID
	Date	Time By	Received	Code Type	
TC14967-1	08/18/12	09:35	08/21/12	AQ Ground Water	WW07-MER-081812



SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: EarthCon Consultants

Job No TC14967

Site: Quarterly Well Sampling, Parker County, Texas

Report Date 8/31/2012 6:52:44 PM

1 Sample was collected on 08/18/2012 and received intact at Accutest on 08/21/2012 and properly preserved in 1 cooler at 1.9 Deg C. The sample received an Accutest job number of TC14967. A listing of the Laboratory Sample ID, Client Sample ID and date of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

Volatiles by GCMS By Method SW846 8260B

Matrix AQ	Batch ID: VK449
------------------	------------------------

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC14974-3MS, TC14974-3MSD were used as the QC samples indicated.

Volatiles by GC By Method RSKSOP-147/175

Matrix AQ	Batch ID: GSS178
------------------	-------------------------

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC14970-1DUP, TC14970-1MS were used as the QC samples indicated.
- Matrix Spike Recovery for Methane is outside control limits. Outside control limits due to high level in sample relative to spike amount.

Accutest Laboratories Gulf Coast (ALGC) certifies that this report meets the project requirements for analytical data produced for the samples as received at ALGC and as stated on the COC. ALGC certifies that the data meets the Data Quality Objectives for precision, accuracy and completeness as specified in the ALGC Quality Manual except as noted above. This report is to be used in its entirety. ALGC is not responsible for any assumptions of data quality if partial data packages are used

Summary of Hits

Page 1 of 1

Job Number: TC14967
Account: EarthCon Consultants
Project: Quarterly Well Sampling, Parker County, Texas
Collected: 08/18/12



Lab Sample ID Analyte	Client Sample ID	Result/ Qual	ML	SDL	Units	Method
TC14967-1	WW07-MER-081812					
Methane		0.596	0.0050	0.0030	mg/l	RSKSOP-147/175
Ethane		0.0311	0.0010	0.00050	mg/l	RSKSOP-147/175



Sample Results

Report of Analysis

Report of Analysis

Page 1 of 1

Client Sample ID:	WW07-MER-081812	Date Sampled:	08/18/12
Lab Sample ID:	TC14967-1	Date Received:	08/21/12
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260B		
Project:	Quarterly Well Sampling, Parker County, Texas		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	K10049.D	1	08/23/12	EM	n/a	n/a	VK449
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

Purgeable Aromatics

CAS No.	Compound	Result	MQL	SDL	Units	Q
71-43-2	Benzene	0.00025 U	0.0010	0.00025	mg/l	
108-88-3	Toluene	0.00026 U	0.0010	0.00026	mg/l	
100-41-4	Ethylbenzene	0.00025 U	0.0010	0.00025	mg/l	
1330-20-7	Xylene (total)	0.00071 U	0.0030	0.00071	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	98%		79-122%
17060-07-0	1,2-Dichloroethane-D4	94%		75-121%
2037-26-5	Toluene-D8	102%		87-119%
460-00-4	4-Bromofluorobenzene	123%		80-133%

U = Not detected SDL - Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Page 1 of 1

Client Sample ID: WW07-MER-081812**Lab Sample ID:** TC14967-1**Date Sampled:** 08/18/12**Matrix:** AQ - Ground Water**Date Received:** 08/21/12**Method:** RSKSOP-147/175**Percent Solids:** n/a**Project:** Quarterly Well Sampling, Parker County, Texas

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	SS003636.D	1	08/27/12	LT	n/a	n/a	GSS178
Run #2	SS003637.D	10	08/27/12	LT	n/a	n/a	GSS178

RSK147 Special List

CAS No.	Compound	Result	MQL	SDL	Units	Q
74-82-8	Methane	0.596 ^a	0.0050	0.0030	mg/l	
74-85-1	Ethene	0.00050 U	0.0010	0.00050	mg/l	
74-84-0	Ethane	0.0311	0.0010	0.00050	mg/l	
74-98-6	Propane	0.00075 U	0.0015	0.00075	mg/l	
75-28-5	Isobutane	0.00075 U	0.0015	0.00075	mg/l	
106-97-8	Butane	0.00075 U	0.0015	0.00075	mg/l	

(a) Result is from Run# 2

U = Not detected SDL - Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound



Misc. Forms



Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody
- LRC Form

10165 Harwin Dr, Ste 150 Houston, TX 77036
TEL: 713-271-4700 FAX: 713-271-4770
www.acctest.com

Client / Reporting Information			Project Information										Requested Analyses										Matrix Codes
Company Name EarthCon Consultants, Inc. Street Address 4800 Sugar Grove Blvd., Suite 390 City State Zip Stafford TX 77477 Project Contact E-mail Gabriela Floreslovo Phone # Fax # 281-207-3513 Sampler(s) Name(s) Phone # JULIE HELFERICH (512) 682-5380			Project Name: Second Quarterly Well Sampling, Parker County, Texas Street Billing Information (if different from Report to) Company Name Street Address City State Zip Client Purchase Order # Project Manager Attention:										Butane, Ethane, Ethene, Isobutane, Methane, Propane by RSK-175 BTEX 0250B										Matrix Codes OW - Drinking Water GW - Ground Water SW - Surface Water SO - Soil SL - Sludge SED - Sediment OL - Oil LIQ - Other Liquid AIR - Air SOL - Other Solid WP - Wipe FB - Field Blank
Field ID / Point of Collection W1W07-MER-081812			Collection Date Time 08/18/2009 3:35		Sampled By JLH		Matrix W		# of bottles 6		Number of preserved bottles X		LAB USE ONLY										
Turnaround Time (Business days) <input checked="" type="checkbox"/> Standard <input type="checkbox"/> 5 Day RUSH <input type="checkbox"/> 4 Day RUSH <input type="checkbox"/> 3 Day RUSH <input type="checkbox"/> 2 Day RUSH <input type="checkbox"/> 1 Day EMERGENCY Emergency & Rush T/A data available VIA Lablink			Approved By (Accutest PM) / Date: 		Data Deliverable Information <input type="checkbox"/> Commercial "A" (Level 1) <input type="checkbox"/> Commercial "B" (Level 2) <input type="checkbox"/> FULT1 (Level 3+4) <input type="checkbox"/> REDT1 (Level 3+4) <input type="checkbox"/> Commercial "C" <input checked="" type="checkbox"/> TRRP <input type="checkbox"/> EDD Format <input type="checkbox"/> Other _____ Commercial "A" = Results Only Commercial "B" = Results + QC Summary Commercial "C" = Results + QC & Surrogate Summary										Comments / Special Instructions 								
Relinquished by Sampler: 1 Julie Helfrich Date Time: 08/17/12 10:15 Relinquished by Sampler: 3 JH Date Time: 08/17/12 8:15 Relinquished by: 5			Date Time: 08/17/12 10:15 Received By: 1 JH Date Time: 08/17/12 8:15 Received By: 3 JH Date Time: 08/17/12 8:15 Received By: 5		Relinquished by: 2 JH Date Time: 08/17/12 10:15 Received By: 4 Date Time:		Custody Seal # <input type="checkbox"/> Intact <input type="checkbox"/> Not Intact		Preserved where applicable <input type="checkbox"/> On Ice <input type="checkbox"/> Cooler Temp.														

5.1

TC14967: Chain of Custody
Page 1 of 3



Accutest Laboratories Sample Receipt Summary

Page 1 of 2

Accutest Job Number: TC14967 Client: EARTHCON CONSULTANTS Project: 2ND QUARTERLY
Date / Time Received: 8/21/2012 Delivery Method: FedEx Airbill #'s: 801561645028
No. Coolers: 1 Therm ID: IRGUN5; Temp Adjustment Factor: -0.4;
Cooler Temps (Initial/Adjusted): #1: (2.3/1.9);

Cooler Security

Y or N

- | | | | | | |
|---------------------------|-------------------------------------|--------------------------|-----------------------|-------------------------------------|--------------------------|
| 1. Custody Seals Present: | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 3. COC Present: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Custody Seals Intact: | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 4. Smpl Dates/Time OK | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

Cooler Temperature

Y or N

- | | | |
|------------------------------|-------------------------------------|--------------------------|
| 1. Temp criteria achieved: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Cooler temp verification: | | |
| 3. Cooler media: | Ice (Bag) | |

Quality Control Preservation

Y or N N/A

- | | | | | | |
|---------------------------------|-------------------------------------|-------------------------------------|--------------------------|-------------------------------------|--------------------------|
| 1. Trip Blank present / cooler: | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | WTB | STB |
| 2. Trip Blank listed on COC: | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 3. Samples preserved properly: | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | |
| 4. VOCs headspace free: | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | |

Sample Integrity - Documentation

Y or N

- | | | |
|--|-------------------------------------|--------------------------|
| 1. Sample labels present on bottles: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Container labeling complete: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 3. Sample container label / COC agree: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

Sample Integrity - Condition

Y or N

- | | | |
|----------------------------------|-------------------------------------|--------------------------|
| 1. Sample recvd within HT: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. All containers accounted for: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 3. Condition of sample: | Intact | |

Sample Integrity - Instructions

Y or N N/A

- | | | | |
|---|-------------------------------------|-------------------------------------|-------------------------------------|
| 1. Analysis requested is clear: | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| 2. Bottles received for unspecified tests | <input type="checkbox"/> | <input checked="" type="checkbox"/> | |
| 3. Sufficient volume recvd for analysis: | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| 4. Compositing instructions clear: | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 5. Filtering instructions clear: | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

Comments

TC14967: Chain of Custody
Page 2 of 3

Sample Receipt Log

Page 2 of 2

Job #: TC13879

Date / Time Received: 8/2/2012 9:50:00 AM

Initials: BG

Client: SPECTRA ENERGY

Cooler #	Sample ID:	Vol	Bot #	Location	Pres	pH	Therm ID	Initial Temp	Therm CF	Corrected Temp
1	TC13879-1	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-1	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-2	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-2	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-3	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-3	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-4	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-4	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-5	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-5	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-6	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-6	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1

 5.1
5

TC14967: Chain of Custody
Page 3 of 3

Appendix A Laboratory Data Package Cover Page

TC14967 This data package consists of

- ☐ This signature page, the laboratory review checklist, and the following reportable data:
- ☐ R1 Field chain-of-custody documentation;
- ☐ R2 Sample identification cross-reference;
- ☐ R3 Test reports (analytical data sheets) for each environmental sample that includes:
 - a) Items consistent with NELAC 5.13 or ISO/IEC 17025 Section 5.10
 - b) dilution factors,
 - c) preparation methods,
 - d) cleanup methods, and
 - e) if required for the project, tentatively identified compounds (TICs).
- ☐ R4 Surrogate recovery data including:
 - a) Calculated recovery (%R), and
 - b) The laboratory's surrogate QC limits.
- ☐ R5 Test reports/summary forms for blank samples;
- ☐ R6 Test reports/summary forms for laboratory control samples (LCSs) including:
 - a) LCS spiking amounts,
 - b) Calculated %R for each analyte, and
 - c) The laboratory's LCS QC limits.
- ☐ R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
 - a) Samples associated with the MS/MSD clearly identified,
 - b) MS/MSD spiking amounts,
 - c) Concentration of each MS/MSD analyte measured in the parent and
 - d) Calculated %Rs and relative percent differences (RPDs), and
 - e) The laboratory's MS/MSD QC limits
- ☐ R8 Laboratory analytical duplicate (if applicable) recovery and precision:
 - a) The amount of analyte measured in the duplicate,
 - b) The calculated RPD, and
 - c) The laboratory's QC limits for analytical duplicates.
- ☐ R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each
- ☐ R10 Other problems or anomalies.

The Exception Report for each "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Report. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratory in the Laboratory Review Checklist, and no information or data have been knowingly withheld.

Check, if applicable: This laboratory meets an exception under 30 TAC&25.6 and was last inspection by

☐ [X] TCEQ or ☐ _____ on April 2011. Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

QA Manager

Name (Printed)

Signature

Official Title (printed)

Date

Richard Rodriguez



Laboratory Director

8/29/2012

LABORATORY REVIEW CHECKLIST: REPORTABLE DATA									
Laboratory Name:		Accutest Gulf Coast		LRC Date:		8/29/2012			
Project Name:		Quarterly Well Sampling, Parker County, Texas		Laboratory Project Number:		TC14967			
Reviewer Name:		Anita Patel		Prep Batch Number(s):		GSS178, VK449			
# ¹	A ²	DESCRIPTION				YES	NO	NA ³	NR ⁴ ER # ⁵
R1	OI	CHAIN-OF-CUSTODY (C-O-C):							
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?				X			
		Were all departures from standard conditions described in an exception report?				X			
R2	OI	Sample and quality control (QC) identification							
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?				X			
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?				X			
R3	OI	Test reports							
		Were samples prepared and analyzed within holding times?				X			
		Other than those results <MQL, were all other raw values bracketed by calibration standards?				X			
		Were calculations checked by a peer or supervisor?				X			
		Were all analyte identifications checked by a peer or supervisor?				X			
		Were sample detection limits reported for all analytes not detected?				X			
		Were all results for soil and sediment samples reported on a dry weight basis?						X	
		Were % moisture (or solids) reported for all soil and sediment samples?						X	
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW846 Method 5035?						X	
		If required for the project, are TIC's reported?						X	
R4	O	Surrogate recovery data							
		Were surrogates added prior to extraction?				X			
		Were surrogate percent recoveries in all samples within the laboratory QC limits?				X			
R5	OI	Test reports/summary forms for blank samples							
		Were appropriate type(s) of blanks analyzed?				X			
		Were blanks analyzed at the appropriate frequency?				X			
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?				X			
		Were blank concentrations <MQL?				X			
R6	OI	Laboratory control samples (LCS):							
		Were all COCs included in the LCS?				X			
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?				X			
		Were LCSs analyzed at required frequency?				X			
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?				X			
		Does the detectability check sample data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?				X			5
		Was the LCSD RPD within QC limits?						X	
R7	OI	Matrix spike (MS) and matrix spike duplicate (MSD) data							
		Were the project/method specified analytes included in the MS and MSD?				X			
		Were MS/MSD analyzed at the appropriate frequency?				X			
		Were MS (and MSD, if applicable) %Rs within the laboratory QC Limits?						X	4
		Were the MS/MSD RPDs within laboratory QC limits?				X			
R8	OI	Analytical duplicate data							
		Were appropriate analytical duplicates analyzed for each matrix?				X			
		Were analytical duplicates analyzed at the appropriate frequency?				X			
		Were RPDs or relative standard deviations within the laboratory QC limits?				X			
R9	OI	Method quantitation limits (MQLs):							
		Are the MQLs for each method analyte included in the laboratory data package?				X			
		Do the MQLs correspond to the concentration of the lowest non-zero calibration				X			
		Are unadjusted MQLs and DCSs included in the laboratory data package?						X	2
R10	OI	Other problems/anomalies							
		Are all known problems/anomalies/special conditions noted in this LRC and ER?				X			
		Was applicable and available technology used to lower the SDL to minimize the				X			
		Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices, and methods associated with this laboratory data package?				X			3

Laboratory Name:		Accutest Gulf Coast	LRC Date:		8/29/2012	
Project Name:		Quarterly Well Sampling, Parker	Laboratory Project Number:		TC14967	
Reviewer Name:		Anita Patel	Prep Batch Number(s):		GSS178, VK449	
# ¹	A ²	DESCRIPTION	YES	NO	NA ³	NR ⁴ ER # ⁵
S1	OI	Initial calibration (ICAL)				
		Were response factors and/or relative response factors for each analyte within QC limits?	X			
		Were percent RSDs or correlation coefficient criteria met?	X			
		Was the number of standards recommended in the method used for all analytes?	X			
		Were all points generated between the lowest and highest standard used to calculate the curve?	X			
		Are ICAL data available for all instruments used?	X			
		Has the initial calibration curve been verified using an appropriate second source standard?	X			
S2	OI	Initial and continuing calibration verification (ICCV AND CCV) and continuing				
		Was the CCV analyzed at the method-required frequency?	X			
		Were percent differences for each analyte within the method-required QC limits?	X			
		Was the ICAL curve verified for each analyte?	X			
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?			X	
S3	O	Mass spectral tuning				
		Was the appropriate compound for the method used for tuning?	X			
		Were ion abundance data within the method-required QC limits?	X			
S4	O	Internal standards (IS)				
		Were IS area counts and retention times within the method-required QC limits?	X			
S5	OI	Raw data (NELAC Section 5.5.10)				
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X			
		Were data associated with manual integrations flagged on the raw data?	X			
S6	O	Dual column confirmation				
		Did dual column confirmation results meet the method-required QC?			X	
S7	O	Tentatively identified compounds (TICs):				
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X	
S8	I	Interference Check Sample (ICS) results				
		Were percent recoveries within method QC limits?			X	
S9	I	Serial dilutions, post digestion spikes, and method of standard additions				
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			X	
S10	OI	Method detection limit (MDL) studies				
		Was a MDL study performed for each reported analyte?	X			
		Is the MDL either adjusted or supported by the analysis of DCSs?	X			5
S11	OI	Proficiency test reports				
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X			
S12	OI	Standards documentation				
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate source?	X			
S13	OI	Compound/analyte identification procedures				
		Are the procedures for compound/analyte identification documented?	X			
S14	OI	Demonstration of analyst competency (DOC)				
		Was DOC conducted consistent with NELAC Chapter 5?	X			
		Is documentation of the analyst's competency up-to-date and on file?	X			
S15	OI	Verification/validation documentation for methods (NELAC Chapter 5)				
		Are all the methods used to generate the data documented, verified, and validated, where applicable?	X			
S16	OI	Laboratory standard operating procedures (SOPs)				
		Are laboratory SOPs current and on file for each method performed?	X			

LABORATORY REVIEW CHECKLIST (continued): Exception Reports			
Laboratory Name:		Accutest Gulf Coast	LRC Date:
			8/29/2012
Project Name:		Quarterly Well Sampling, Parker	Laboratory Project Number:
			TC14967
Reviewer Name:		Anita Patel	Prep Batch Number(s):
			GSS178, VK449
ER# ¹	Description		
1	For reporting purposes, the MQL is defined in the report as the RL. The unadjusted MQL/RL is reported in the method blank. The SDL is defined in the report as the MDL.		
2	For reporting purposes, the method blank represents the unadjusted MQL. The DCS is on file in the laboratory and is not included in the laboratory data package.		
3	The laboratory is NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices, and methods associated with this laboratory data package for analytes that are listed in the Texas Fields of Accreditation.		
4	All anomalies are discussed in the case narrative.		
5	The Laboratory does not perform DCS analysis for Method RSKSOP-147/175. The components reported are not listed or do not have values in the Texas TRRP PCL tables.		

¹ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked on

GC/MS Volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries



Method Blank Summary

Page 1 of 1

Job Number: TC14967

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VK449-MB	K10026.D	1	08/23/12	EM	n/a	n/a	VK449

The QC reported here applies to the following samples:

Method: SW846 8260B

TC14967-1

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.25	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.25	ug/l	
108-88-3	Toluene	ND	1.0	0.26	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.71	ug/l	

CAS No.	Surrogate Recoveries	Limits
1868-53-7	Dibromofluoromethane	101% 79-122%
17060-07-0	1,2-Dichloroethane-D4	96% 75-121%
2037-26-5	Toluene-D8	102% 87-119%
460-00-4	4-Bromofluorobenzene	123% 80-133%

6.1.1

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Blank Spike Summary

Page 1 of 1

Job Number: TC14967

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VK449-BS	K10024.D	1	08/23/12	EM	n/a	n/a	VK449

The QC reported here applies to the following samples:

Method: SW846 8260B

TC14967-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2	Benzene	25	24.2	97	76-118
100-41-4	Ethylbenzene	25	25.2	101	75-112
108-88-3	Toluene	25	25.0	100	77-114
1330-20-7	Xylene (total)	75	76.6	102	75-111

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	99%	79-122%
17060-07-0	1,2-Dichloroethane-D4	95%	75-121%
2037-26-5	Toluene-D8	103%	87-119%
460-00-4	4-Bromofluorobenzene	123%	80-133%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: TC14967

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC14974-3MS	K10030.D	1	08/23/12	EM	n/a	n/a	VK449
TC14974-3MSD	K10031.D	1	08/23/12	EM	n/a	n/a	VK449
TC14974-3 ^a	K10029.D	1	08/23/12	EM	n/a	n/a	VK449

The QC reported here applies to the following samples:

Method: SW846 8260B

TC14967-1

CAS No.	Compound	TC14974-3 ug/l	Spike Q	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	1.0 U	25	24.1	96	23.3	93	3	76-118/16
100-41-4	Ethylbenzene	1.0 U	25	25.1	100	24.2	97	4	75-112/12
108-88-3	Toluene	1.0 U	25	24.8	99	23.8	95	4	77-114/12
1330-20-7	Xylene (total)	3.0 U	75	74.8	100	73.2	98	2	75-111/12

CAS No.	Surrogate Recoveries	MS	MSD	TC14974-3	Limits
1868-53-7	Dibromofluoromethane	99%	99%	100%	79-122%
17060-07-0	1,2-Dichloroethane-D4	96%	95%	96%	75-121%
2037-26-5	Toluene-D8	103%	102%	102%	87-119%
460-00-4	4-Bromofluorobenzene	122%	122%	121%	80-133%

(a) Sample was not preserved to a pH < 2

* = Outside of Control Limits.

GC Volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

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Method Blank Summary

Page 1 of 1

Job Number: TC14967

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GSS178-MB	SS003617.D	1	08/27/12	LT	n/a	n/a	GSS178

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC14967-1

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	ND	0.50	0.30	ug/l	
74-85-1	Ethene	ND	1.0	0.50	ug/l	
74-84-0	Ethane	ND	1.0	0.50	ug/l	
74-98-6	Propane	ND	1.5	0.75	ug/l	
75-28-5	Isobutane	ND	1.5	0.75	ug/l	
106-97-8	Butane	ND	1.5	0.75	ug/l	

7.1.1

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Blank Spike Summary

Page 1 of 1

Job Number: TC14967

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GSS178-BS	SS003615.D	1	08/27/12	LT	n/a	n/a	GSS178

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC14967-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
74-82-8	Methane	21.5	20.8	97	70-130
74-85-1	Ethene	57.4	58.2	101	70-130
74-84-0	Ethane	43.3	41.8	97	70-130
74-98-6	Propane	60.6	56.5	93	70-130
75-28-5	Isobutane	72.5	71.1	98	70-130
106-97-8	Butane	76.6	73.7	96	70-130

* = Outside of Control Limits.

Matrix Spike Summary

Page 1 of 1

Job Number: TC14967

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC14970-1MS	SS003620.D	1	08/27/12	LT	n/a	n/a	GSS178
TC14970-1	SS003618.D	1	08/27/12	LT	n/a	n/a	GSS178
TC14970-1	SS003621.D	10	08/27/12	LT	n/a	n/a	GSS178

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC14967-1

CAS No.	Compound	TC14970-1 ug/l	Spike Q	MS ug/l	MS %	Limits
74-82-8	Methane	914 ^b	21.5	600	-337* ^a	60-140
74-85-1	Ethene	1.0 U	57.4	58.8	102	60-140
74-84-0	Ethane	42.3	43.3	71.7	68	60-140
74-98-6	Propane	1.5 U	60.6	56.4	93	60-140
75-28-5	Isobutane	1.5 U	72.5	70.6	97	60-140
106-97-8	Butane	1.5 U	76.6	74.0	97	60-140

(a) Outside control limits due to high level in sample relative to spike amount.

(b) Result is from Run #2.

* = Outside of Control Limits.

Duplicate Summary

Page 1 of 1

Job Number: TC14967

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC14970-1DUP	SS003619.D	1	08/27/12	LT	n/a	n/a	GSS178
TC14970-1	SS003618.D	1	08/27/12	LT	n/a	n/a	GSS178
TC14970-1	SS003621.D	10	08/27/12	LT	n/a	n/a	GSS178

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC14967-1

CAS No.	Compound	TC14970-1 ug/l	DUP Q	DUP ug/l	Q	RPD	Limits
74-82-8	Methane	914 ^a		869	E	26	30
74-85-1	Ethene	1.0 U		ND		nc	30
74-84-0	Ethane	42.3		57.4		30	30
74-98-6	Propane	1.5 U		ND		nc	30
75-28-5	Isobutane	1.5 U		ND		nc	30
106-97-8	Butane	1.5 U		ND		nc	30

(a) Result is from Run #2.

* = Outside of Control Limits.

Lab #: 261142 Job #: 19036
 Sample Name/Number: WW07-MER-081812
 Company: Oil Tracers, LLC
 Date Sampled: 8/18/2012
 Container: Dissolved Gas Bottle
 Field/Site Name: Second Quarter Well Sampling
 Location: Parker County, TX
 Formation/Depth:
 Sampling Point:
 Date Received: 8/22/2012 Date Reported: 9/11/2012

Component	Chemical mol. %	$\delta^{13}\text{C}$ ‰	δD ‰	$\delta^{18}\text{O}$ ‰
Carbon Monoxide -----	nd			
Hydrogen Sulfide -----	na			
Helium -----	na			
Hydrogen -----	nd			
Argon -----	1.32			
Oxygen -----	0.045			
Nitrogen -----	80.87			
Carbon Dioxide -----	0.33			
Methane -----	17.21	-43.22	-140.9	
Ethane -----	0.227	-14.4		
Ethylene -----	nd			
Propane -----	nd			
Propylene -----	nd			
Iso-butane -----	nd			
N-butane -----	0.0014			
Iso-pentane -----	nd			
N-pentane -----	nd			
Hexanes + -----	nd			

Total BTU/cu.ft. dry @ 60deg F & 14.73psia, calculated: 178

Specific gravity, calculated: 0.904

Remarks:

Analysis is of gas extracted from water by headspace equilibration. Analysis has been corrected for helium added to create headspace. Helium dilution factor = 0.77

*Addition of helium negates the ability to detect native helium and may negate the ability to detect hydrogen.

** Ethane isotopes obtained online via GC-C-IRMS

nd = not detected. na = not analyzed. Isotopic composition of hydrogen is relative to VSMOW. Isotopic composition of carbon is relative to VPDB. Isotopic composition of oxygen is relative to VSMOW, except for carbon dioxide which is relative to VPDB. Calculations for BTU and specific gravity per ASTM D3588. Chemical compositions are normalized to 100%. Mol. % is approximately equal to vol. %.



08/31/12

Technical Report for

EarthCon Consultants

Quarterly Well Sampling, Parker County, Texas

2nd Quarter / WWW02-PUR

Accutest Job Number: TC14971

Sampling Date: 08/17/12

Report to:

EarthCon Consultants
4800 Sugar Grove Suite 420
Stafford, TX 77477
gfloreslovo@earthcon.com; djackson@jacksonsjoberg.com;
mcpatton@rangeresources.com; escott@earthcon.com
ATTN: Gabriela Floreslovo

Total number of pages in report: **25**



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.


Richard Rodriguez
Laboratory Director

Client Service contact: Elessa Sommers 713-271-4700

Certifications: TX (T104704220-12-8) AR (11-028-0) AZ (AZ0769) FL (E87628) KS (E-10366)
LA (85695/04004) OK (211-035)

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Test results relate only to samples analyzed.

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Sample Summary

EarthCon Consultants

Job No: TC14971

Quarterly Well Sampling, Parker County, Texas
Project No: 2nd Quarter / WWW02-PUR

Sample Number	Collected Date	Time By	Received	Matrix Code Type	Client Sample ID
TC14971-1	08/17/12	09:05	08/21/12	AQ Ground Water	WWW02-PUR-081712



SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: EarthCon Consultants

Job No TC14971

Site: Quarterly Well Sampling, Parker County, Texas

Report Date 8/31/2012 6:58:10 PM

1 Sample was collected on 08/17/2012 and received intact at Accutest on 08/21/2012 and properly preserved in 1 cooler at 2.4 Deg C. The sample received an Accutest job number of TC14971. A listing of the Laboratory Sample ID, Client Sample ID and date of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

Volatiles by GCMS By Method SW846 8260B

Matrix AQ	Batch ID: VZ3732
------------------	-------------------------

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC14970-IMS, TC14970-IMSD were used as the QC samples indicated.

Volatiles by GC By Method RSKSOP-147/175

Matrix AQ	Batch ID: GSS178
------------------	-------------------------

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC14970-1DUP, TC14970-IMS were used as the QC samples indicated.
- Matrix Spike Recovery for Methane is outside control limits. Outside control limits due to high level in sample relative to spike amount.

Accutest Laboratories Gulf Coast (ALGC) certifies that this report meets the project requirements for analytical data produced for the samples as received at ALGC and as stated on the COC. ALGC certifies that the data meets the Data Quality Objectives for precision, accuracy and completeness as specified in the ALGC Quality Manual except as noted above. This report is to be used in its entirety. ALGC is not responsible for any assumptions of data quality if partial data packages are used

Summary of Hits

Page 1 of 1

Job Number: TC14971
Account: EarthCon Consultants
Project: Quarterly Well Sampling, Parker County, Texas
Collected: 08/17/12



Lab Sample ID Analyte	Client Sample ID	Result/ Qual	ML	SDL	Units	Method
TC14971-1	WWW02-PUR-081712					
Benzene		0.00069 J	0.0010	0.00025	mg/l	SW846 8260B
Methane		4.24	0.050	0.030	mg/l	RSKSOP-147/175
Ethane		0.050 U	0.10	0.050	mg/l	RSKSOP-147/175
Propane		0.0213	0.0015	0.00075	mg/l	RSKSOP-147/175
Isobutane		0.0031	0.0015	0.00075	mg/l	RSKSOP-147/175
Butane		0.0032	0.0015	0.00075	mg/l	RSKSOP-147/175



Sample Results

Report of Analysis

Report of Analysis

Client Sample ID: WWW02-PUR-081712

Lab Sample ID: TC14971-1

Date Sampled: 08/17/12

Matrix: AQ - Ground Water

Date Received: 08/21/12

Method: SW846 8260B

Percent Solids: n/a

Project: Quarterly Well Sampling, Parker County, Texas

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Z028330.D	1	08/24/12	AK	n/a	n/a	VZ3732
Run #2							

Purge Volume

Run #1 5.0 ml

Run #2

Purgeable Aromatics

CAS No.	Compound	Result	MQL	SDL	Units	Q
71-43-2	Benzene	0.00069	0.0010	0.00025	mg/l	J
108-88-3	Toluene	0.00026 U	0.0010	0.00026	mg/l	
100-41-4	Ethylbenzene	0.00025 U	0.0010	0.00025	mg/l	
1330-20-7	Xylene (total)	0.00071 U	0.0030	0.00071	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	105%		79-122%
17060-07-0	1,2-Dichloroethane-D4	95%		75-121%
2037-26-5	Toluene-D8	106%		87-119%
460-00-4	4-Bromofluorobenzene	115%		80-133%

U = Not detected SDL - Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Page 1 of 1

Client Sample ID: WWW02-PUR-081712							
Lab Sample ID: TC14971-1				Date Sampled: 08/17/12			
Matrix: AQ - Ground Water				Date Received: 08/21/12			
Method: RSKSOP-147/175				Percent Solids: n/a			
Project: Quarterly Well Sampling, Parker County, Texas							

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	SS003641.D	1	08/27/12	LT	n/a	n/a	GSS178
Run #2	SS003642.D	100	08/27/12	LT	n/a	n/a	GSS178

RSK147 Special List

CAS No.	Compound	Result	MQL	SDL	Units	Q
74-82-8	Methane	4.24 ^a	0.050	0.030	mg/l	
74-85-1	Ethene	0.00050 U	0.0010	0.00050	mg/l	
74-84-0	Ethane	0.050 U ^a	0.10	0.050	mg/l	
74-98-6	Propane	0.0213	0.0015	0.00075	mg/l	
75-28-5	Isobutane	0.0031	0.0015	0.00075	mg/l	
106-97-8	Butane	0.0032	0.0015	0.00075	mg/l	

(a) Result is from Run# 2

U = Not detected SDL - Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Misc. Forms

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Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody
- LRC Form

Accutest Job Number: TC14971 Client: EARTHCON CONSULTANTS Project: 2ND QUARTERLY
 Date / Time Received: 8/21/2012 Delivery Method: FedEx Airbill #'s: 795765167616
 No. Coolers: 1 Therm ID: IRGUN5; Temp Adjustment Factor: -0.4;
 Cooler Temps (Initial/Adjusted): #1: (2.8/2.4);

Cooler Security
Y or N

- | | | | | | |
|---------------------------|-------------------------------------|--------------------------|-----------------------|-------------------------------------|--------------------------|
| 1. Custody Seals Present: | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 3. COC Present: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Custody Seals Intact: | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 4. Smpl Dates/Time OK | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

Cooler Temperature
Y or N

- | | | |
|------------------------------|-------------------------------------|--------------------------|
| 1. Temp criteria achieved: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Cooler temp verification: | | |
| 3. Cooler media: | Ice (Bag) | |

Quality Control Preservation
Y or N
N/A
WTB STB

- | | | | | | |
|---------------------------------|-------------------------------------|-------------------------------------|--------------------------|-------------------------------------|--------------------------|
| 1. Trip Blank present / cooler: | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Trip Blank listed on COC: | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | |
| 3. Samples preserved properly: | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | |
| 4. VOCs headspace free: | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | |

Sample Integrity - Documentation
Y or N

- | | | |
|--|-------------------------------------|--------------------------|
| 1. Sample labels present on bottles: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Container labeling complete: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 3. Sample container label / COC agree: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

Sample Integrity - Condition
Y or N

- | | | |
|----------------------------------|-------------------------------------|--------------------------|
| 1. Sample recvd within HT: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. All containers accounted for: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 3. Condition of sample: | Intact | |

Sample Integrity - Instructions
Y or N N/A

- | | | | |
|---|-------------------------------------|-------------------------------------|-------------------------------------|
| 1. Analysis requested is clear: | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| 2. Bottles received for unspecified tests | <input type="checkbox"/> | <input checked="" type="checkbox"/> | |
| 3. Sufficient volume recvd for analysis: | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| 4. Compositing instructions clear: | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 5. Filtering instructions clear: | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

Comments

 5.1
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TC14971: Chain of Custody
Page 2 of 3

Sample Receipt Log

Page 2 of 2

Job #: TC13879

Date / Time Received: 8/2/2012 9:50:00 AM

Initials: BG

Client: SPECTRA ENERGY

Cooler #	Sample ID:	Vol	Bot #	Location	Pres	pH	Therm ID	Initial Temp	Therm CF	Corrected Temp
1	TC13879-1	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-1	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-2	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-2	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-3	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-3	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-4	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-4	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-5	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-5	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-6	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-6	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1

5.1

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TC14971: Chain of Custody
Page 3 of 3

Appendix A Laboratory Data Package Cover Page

TC14971 This data package consists of

- ☐ This signature page, the laboratory review checklist, and the following reportable data:
- ☐ R1 Field chain-of-custody documentation;
- ☐ R2 Sample identification cross-reference;
- ☐ R3 Test reports (analytical data sheets) for each environmental sample that includes:
 - a) Items consistent with NELAC 5.13 or ISO/IEC 17025 Section 5.10
 - b) dilution factors,
 - c) preparation methods,
 - d) cleanup methods, and
 - e) if required for the project, tentatively identified compounds (TICs).
- ☐ R4 Surrogate recovery data including:
 - a) Calculated recovery (%R), and
 - b) The laboratory's surrogate QC limits.
- ☐ R5 Test reports/summary forms for blank samples;
- ☐ R6 Test reports/summary forms for laboratory control samples (LCSs) including:
 - a) LCS spiking amounts,
 - b) Calculated %R for each analyte, and
 - c) The laboratory's LCS QC limits.
- ☐ R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
 - a) Samples associated with the MS/MSD clearly identified,
 - b) MS/MSD spiking amounts,
 - c) Concentration of each MS/MSD analyte measured in the parent and
 - d) Calculated %Rs and relative percent differences (RPDs), and
 - e) The laboratory's MS/MSD QC limits
- ☐ R8 Laboratory analytical duplicate (if applicable) recovery and precision:
 - a) The amount of analyte measured in the duplicate,
 - b) The calculated RPD, and
 - c) The laboratory's QC limits for analytical duplicates.
- ☐ R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each
- ☐ R10 Other problems or anomalies.


The Exception Report for each "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Report. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratory in the Laboratory Review Checklist, and no information or data have been knowingly withheld.

Check, if applicable: This laboratory meets an exception under 30 TAC&25.6 and was last inspection by

☐ [X] TCEQ or ☐ _____ on April 2011. Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

QA Manager

Name (Printed)	Signature	Official Title (printed)	Date
Richard Rodriguez		Laboratory Director	8/29/2012

LABORATORY REVIEW CHECKLIST: REPORTABLE DATA									
Laboratory Name:		Accutest Gulf Coast		LRC Date:		8/29/2012			
Project Name:		Quarterly Well Sampling, Parker County, Texas		Laboratory Project Number:		TC14971			
Reviewer Name:		Anita Patel		Prep Batch Number(s):		GSS178, VZ3732			
# ¹	A ²	DESCRIPTION				YES	NO	NA ³	NR ⁴ ER # ⁵
R1	OI	CHAIN-OF-CUSTODY (C-O-C):							
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?				X			
		Were all departures from standard conditions described in an exception report?				X			
R2	OI	Sample and quality control (QC) identification							
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?				X			
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?				X			
R3	OI	Test reports							
		Were samples prepared and analyzed within holding times?				X			
		Other than those results <MQL, were all other raw values bracketed by calibration standards?				X			
		Were calculations checked by a peer or supervisor?				X			
		Were all analyte identifications checked by a peer or supervisor?				X			
		Were sample detection limits reported for all analytes not detected?				X			
		Were all results for soil and sediment samples reported on a dry weight basis?					X		
		Were % moisture (or solids) reported for all soil and sediment samples?					X		
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW846 Method 5035?					X		
		If required for the project, are TIC's reported?					X		
R4	O	Surrogate recovery data							
		Were surrogates added prior to extraction?				X			
		Were surrogate percent recoveries in all samples within the laboratory QC limits?				X			
R5	OI	Test reports/summary forms for blank samples							
		Were appropriate type(s) of blanks analyzed?				X			
		Were blanks analyzed at the appropriate frequency?				X			
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?				X			
		Were blank concentrations <MQL?				X			
R6	OI	Laboratory control samples (LCS):							
		Were all COCs included in the LCS?				X			
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?				X			
		Were LCSs analyzed at required frequency?				X			
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?				X			
		Does the detectability check sample data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?				X			4
		Was the LCSD RPD within QC limits?					X		
R7	OI	Matrix spike (MS) and matrix spike duplicate (MSD) data							
		Were the project/method specified analytes included in the MS and MSD?				X			
		Were MS/MSD analyzed at the appropriate frequency?				X			
		Were MS (and MSD, if applicable) %Rs within the laboratory QC Limits?					X		4
		Were the MS/MSD RPDs within laboratory QC limits?				X			
R8	OI	Analytical duplicate data							
		Were appropriate analytical duplicates analyzed for each matrix?				X			
		Were analytical duplicates analyzed at the appropriate frequency?				X			
		Were RPDs or relative standard deviations within the laboratory QC limits?				X			
R9	OI	Method quantitation limits (MQLs):							
		Are the MQLs for each method analyte included in the laboratory data package?				X			
		Do the MQLs correspond to the concentration of the lowest non-zero calibration				X			
		Are unadjusted MQLs and DCSSs included in the laboratory data package?					X		2
R10	OI	Other problems/anomalies							
		Are all known problems/anomalies/special conditions noted in this LRC and ER?				X			
		Was applicable and available technology used to lower the SDL to minimize the				X			
		Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices, and methods associated with this laboratory data package?				X			3

Laboratory Name:		Accutest Gulf Coast	LRC Date:		8/29/2012	
Project Name:		Quarterly Well Sampling, Parker	Laboratory Project Number:		TC14971	
Reviewer Name:		Anita Patel	Prep Batch Number(s):		GSS178, VZ3732	
# ¹	A ²	DESCRIPTION	YES	NO	NA ³	NR ⁴ ER # ⁵
S1	OI	Initial calibration (ICAL)				
		Were response factors and/or relative response factors for each analyte within QC limits?	X			
		Were percent RSDs or correlation coefficient criteria met?	X			
		Was the number of standards recommended in the method used for all analytes?	X			
		Were all points generated between the lowest and highest standard used to calculate the curve?	X			
		Are ICAL data available for all instruments used?	X			
		Has the initial calibration curve been verified using an appropriate second source standard?	X			
S2	OI	Initial and continuing calibration verification (ICCV AND CCV) and continuing				
		Was the CCV analyzed at the method-required frequency?	X			
		Were percent differences for each analyte within the method-required QC limits?	X			
		Was the ICAL curve verified for each analyte?	X			
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?			X	
S3	O	Mass spectral tuning				
		Was the appropriate compound for the method used for tuning?	X			
		Were ion abundance data within the method-required QC limits?	X			
S4	O	Internal standards (IS)				
		Were IS area counts and retention times within the method-required QC limits?	X			
S5	OI	Raw data (NELAC Section 5.5.10)				
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X			
		Were data associated with manual integrations flagged on the raw data?	X			
S6	O	Dual column confirmation				
		Did dual column confirmation results meet the method-required QC?			X	
S7	O	Tentatively identified compounds (TICs):				
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X	
S8	I	Interference Check Sample (ICS) results				
		Were percent recoveries within method QC limits?			X	
S9	I	Serial dilutions, post digestion spikes, and method of standard additions				
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			X	
S10	OI	Method detection limit (MDL) studies				
		Was a MDL study performed for each reported analyte?	X			
		Is the MDL either adjusted or supported by the analysis of DCSs?	X			5
S11	OI	Proficiency test reports				
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X			
S12	OI	Standards documentation				
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate source?	X			
S13	OI	Compound/analyte identification procedures				
		Are the procedures for compound/analyte identification documented?	X			
S14	OI	Demonstration of analyst competency (DOC)				
		Was DOC conducted consistent with NELAC Chapter 5?	X			
		Is documentation of the analyst's competency up-to-date and on file?	X			
S15	OI	Verification/validation documentation for methods (NELAC Chapter 5)				
		Are all the methods used to generate the data documented, verified, and validated, where applicable?	X			
S16	OI	Laboratory standard operating procedures (SOPs)				
		Are laboratory SOPs current and on file for each method performed?	X			

LABORATORY REVIEW CHECKLIST (continued): Exception Reports			
Laboratory Name:		Accutest Gulf Coast	LRC Date: 8/29/2012
Project Name:		Quarterly Well Sampling, Parker	Laboratory Project Number: TC14971
Reviewer Name:		Anita Patel	Prep Batch Number(s): GSS178, VZ3732
ER# ¹	Description		
1	For reporting purposes, the MQL is defined in the report as the RL. The unadjusted MQL/RL is reported in the method blank. The SDL is defined in the report as the MDL.		
2	For reporting purposes, the method blank represents the unadjusted MQL. The DCS is on file in the laboratory and is not included in the laboratory data package.		
3	The laboratory is NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices, and methods associated with this laboratory data package for analytes that are listed in the Texas Fields of Accreditation.		
4	All anomalies are discussed in the case narrative.		
5	The Laboratory does not perform DCS analysis for Method RKSOP-147/175. The components reported are not listed or do not have values in the Texas TRRP PCL tables.		

¹ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked on

GC/MS Volatiles



QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Page 1 of 1

Job Number: TC14971

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VZ3732-MB	Z028313.D	1	08/24/12	AK	n/a	n/a	VZ3732

The QC reported here applies to the following samples:

Method: SW846 8260B

TC14971-1

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.25	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.25	ug/l	
108-88-3	Toluene	ND	1.0	0.26	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.71	ug/l	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	106%	79-122%
17060-07-0	1,2-Dichloroethane-D4	98%	75-121%
2037-26-5	Toluene-D8	106%	87-119%
460-00-4	4-Bromofluorobenzene	114%	80-133%

6.1.1

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Blank Spike Summary

Page 1 of 1

Job Number: TC14971

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VZ3732-BS	Z028311.D	1	08/24/12	AK	n/a	n/a	VZ3732

The QC reported here applies to the following samples:

Method: SW846 8260B

TC14971-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2	Benzene	25	23.5	94	76-118
100-41-4	Ethylbenzene	25	23.6	94	75-112
108-88-3	Toluene	25	23.2	93	77-114
1330-20-7	Xylene (total)	75	70.6	94	75-111

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	99%	79-122%
17060-07-0	1,2-Dichloroethane-D4	90%	75-121%
2037-26-5	Toluene-D8	103%	87-119%
460-00-4	4-Bromofluorobenzene	109%	80-133%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: TC14971

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC14970-1MS	Z028320.D	1	08/24/12	AK	n/a	n/a	VZ3732
TC14970-1MSD	Z028321.D	1	08/24/12	AK	n/a	n/a	VZ3732
TC14970-1	Z028319.D	1	08/24/12	AK	n/a	n/a	VZ3732

The QC reported here applies to the following samples:

Method: SW846 8260B

TC14971-1

CAS No.	Compound	TC14970-1 ug/l	Spike Q	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	1.0 U	25	24.5	98	24.2	97	1	76-118/16
100-41-4	Ethylbenzene	1.0 U	25	24.7	99	23.7	95	4	75-112/12
108-88-3	Toluene	1.0 U	25	24.4	98	24.1	96	1	77-114/12
1330-20-7	Xylene (total)	3.0 U	75	74.1	99	72.6	97	2	75-111/12

CAS No.	Surrogate Recoveries	MS	MSD	TC14970-1	Limits
1868-53-7	Dibromofluoromethane	107%	106%	104%	79-122%
17060-07-0	1,2-Dichloroethane-D4	94%	93%	96%	75-121%
2037-26-5	Toluene-D8	107%	107%	107%	87-119%
460-00-4	4-Bromofluorobenzene	113%	113%	113%	80-133%

* = Outside of Control Limits.

GC Volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

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Method Blank Summary

Page 1 of 1

Job Number: TC14971

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GSS178-MB	SS003617.D	1	08/27/12	LT	n/a	n/a	GSS178

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC14971-1

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	ND	0.50	0.30	ug/l	
74-85-1	Ethene	ND	1.0	0.50	ug/l	
74-84-0	Ethane	ND	1.0	0.50	ug/l	
74-98-6	Propane	ND	1.5	0.75	ug/l	
75-28-5	Isobutane	ND	1.5	0.75	ug/l	
106-97-8	Butane	ND	1.5	0.75	ug/l	

7.1.1

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Blank Spike Summary

Page 1 of 1

Job Number: TC14971

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GSS178-BS	SS003615.D	1	08/27/12	LT	n/a	n/a	GSS178

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC14971-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
74-82-8	Methane	21.5	20.8	97	70-130
74-85-1	Ethene	57.4	58.2	101	70-130
74-84-0	Ethane	43.3	41.8	97	70-130
74-98-6	Propane	60.6	56.5	93	70-130
75-28-5	Isobutane	72.5	71.1	98	70-130
106-97-8	Butane	76.6	73.7	96	70-130

* = Outside of Control Limits.

Matrix Spike Summary

Page 1 of 1

Job Number: TC14971

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC14970-1MS	SS003620.D	1	08/27/12	LT	n/a	n/a	GSS178
TC14970-1	SS003618.D	1	08/27/12	LT	n/a	n/a	GSS178
TC14970-1	SS003621.D	10	08/27/12	LT	n/a	n/a	GSS178

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC14971-1

CAS No.	Compound	TC14970-1 ug/l	Spike Q	MS ug/l	MS %	Limits
74-82-8	Methane	914 ^b	21.5	600	-337* ^a	60-140
74-85-1	Ethene	1.0 U	57.4	58.8	102	60-140
74-84-0	Ethane	42.3	43.3	71.7	68	60-140
74-98-6	Propane	1.5 U	60.6	56.4	93	60-140
75-28-5	Isobutane	1.5 U	72.5	70.6	97	60-140
106-97-8	Butane	1.5 U	76.6	74.0	97	60-140

(a) Outside control limits due to high level in sample relative to spike amount.

(b) Result is from Run #2.

* = Outside of Control Limits.

Duplicate Summary

Page 1 of 1

Job Number: TC14971

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC14970-1DUP	SS003619.D	1	08/27/12	LT	n/a	n/a	GSS178
TC14970-1	SS003618.D	1	08/27/12	LT	n/a	n/a	GSS178
TC14970-1	SS003621.D	10	08/27/12	LT	n/a	n/a	GSS178

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC14971-1

CAS No.	Compound	TC14970-1	DUP				Limits
		ug/l	Q	ug/l	Q	RPD	
74-82-8	Methane	914 ^a		869	E	26	30
74-85-1	Ethene	1.0 U		ND		nc	30
74-84-0	Ethane	42.3		57.4		30	30
74-98-6	Propane	1.5 U		ND		nc	30
75-28-5	Isobutane	1.5 U		ND		nc	30
106-97-8	Butane	1.5 U		ND		nc	30

(a) Result is from Run #2.

* = Outside of Control Limits.

Lab #: 261136 Job #: 19036
 Sample Name/Number: WWW02-PUR-081712
 Company: Oil Tracers, LLC
 Date Sampled: 8/17/2012
 Container: Dissolved Gas Bottle
 Field/Site Name: Second Quarter Well Sampling
 Location: Parker County, TX
 Formation/Depth:
 Sampling Point:
 Date Received: 8/22/2012 Date Reported: 9/11/2012

Component	Chemical mol. %	$\delta^{13}\text{C}$ ‰	δD ‰	$\delta^{18}\text{O}$ ‰
Carbon Monoxide -----	nd			
Hydrogen Sulfide -----	na			
Helium -----	na			
Hydrogen -----	nd			
Argon -----	0.543			
Oxygen -----	3.29			
Nitrogen -----	23.44			
Carbon Dioxide -----	0.22			
Methane -----	67.19	-50.50	-196.0	
Ethane -----	5.21	-32.50		
Ethylene -----	nd			
Propane -----	0.0791	-26.2		
Propylene -----	nd			
Iso-butane -----	0.0106			
N-butane -----	0.0087			
Iso-pentane -----	0.0027			
N-pentane -----	0.0014			
Hexanes + -----	0.0035			

Total BTU/cu.ft. dry @ 60deg F & 14.73psia, calculated: 776

Specific gravity, calculated: 0.702

Remarks:

Analysis is of gas extracted from water by headspace equilibration. Analysis has been corrected for helium added to create headspace. Helium dilution factor = 0.62

*Addition of helium negates the ability to detect native helium and may negate the ability to detect hydrogen.

** Propane isotopes obtained online via GC-C-IRMS

nd = not detected. na = not analyzed. Isotopic composition of hydrogen is relative to VSMOW. Isotopic composition of carbon is relative to VPDB. Isotopic composition of oxygen is relative to VSMOW, except for carbon dioxide which is relative to VPDB. Calculations for BTU and specific gravity per ASTM D3588. Chemical compositions are normalized to 100%. Mol. % is approximately equal to vol. %.



Reissue #1
09/06/12

Technical Report for

EarthCon Consultants

Quarterly Well Sampling, Parker County, Texas

2nd Quarter / WW24-SMI

Accutest Job Number: TC14956

Sampling Date: 08/17/12

Report to:

EarthCon Consultants
4800 Sugar Grove Suite 420
Stafford, TX 77477
gfloreslovo@earthcon.com; djackson@jacksonsjoberg.com;
mcpatton@rangeresources.com; escott@earthcon.com
ATTN: Gabriela Floreslovo

Total number of pages in report: 26



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.


Richard Rodriguez
Laboratory Director

Client Service contact: Elessa Sommers 713-271-4700

Certifications: TX (T104704220-12-8) AR (11-028-0) AZ (AZ0769) FL (E87628) KS (E-10366)
LA (85695/04004) OK (211-035)

This report shall not be reproduced, except in its entirety, without the written approval of Accutest Laboratories.
Test results relate only to samples analyzed.



Gulf Coast. Inc.

10165 Harwin Drive
Houston, TX 77036
Tel: 713-271-4700

www.accutest.com

Thursday, September 06, 2012

EarthCon Consultants
4800 Sugar Grove, Suite 420
Stafford, TX 77477
ATTN: Gabriela Floreslovo

RE: Accutest job TC14956 Reissue

Dear Ms. Floreslovo:

The final report for job number TC14956 has been revised to identify the sampling event as 2nd Quarter.

Please feel free to contact me if I can be of further assistance.

Sincerely,

Elessa Sommers

Elessa Sommers
Project Manager

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Sample Summary

EarthCon Consultants

Job No: TC14956

Quarterly Well Sampling, Parker County, Texas
Project No: 2nd Quarter / WW24-SMI

Sample Number	Collected Date	Time By	Received	Matrix Code Type	Client Sample ID
TC14956-1	08/17/12	10:55	08/21/12	AQ Ground Water	WW24-SMI-081712



SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: EarthCon Consultants

Job No TC14956

Site: Quarterly Well Sampling, Parker County, Texas

Report Date 8/29/2012 2:02:29 PM

1 Sample was collected on 08/17/2012 and received intact at Accutest on 08/21/2012 and properly preserved in 1 cooler at 2.4 Deg C. The sample received an Accutest job number of TC14956. A listing of the Laboratory Sample ID, Client Sample ID and date of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

Volatiles by GCMS By Method SW846 8260B

Matrix AQ

Batch ID: VK449

- ▣ All samples were analyzed within the recommended method holding time.
- ▣ All method blanks for this batch meet method specific criteria.
- ▣ Sample(s) TC14974-3MS, TC14974-3MSD were used as the QC samples indicated.

Volatiles by GC By Method RSKSOP-147/175

Matrix AQ

Batch ID: GSS178

- ▣ All samples were analyzed within the recommended method holding time.
- ▣ All method blanks for this batch meet method specific criteria.
- ▣ Sample(s) TC14970-1DUP, TC14970-1MS were used as the QC samples indicated.
- ▣ Matrix Spike Recovery for Methane is outside control limits. Outside control limits due to high level in sample relative to spike amount.

Accutest Laboratories Gulf Coast (ALGC) certifies that this report meets the project requirements for analytical data produced for the samples as received at ALGC and as stated on the COC. ALGC certifies that the data meets the Data Quality Objectives for precision, accuracy and completeness as specified in the ALGC Quality Manual except as noted above. This report is to be used in its entirety. ALGC is not responsible for any assumptions of data quality if partial data packages are used

Summary of Hits

Page 1 of 1

Job Number: TC14956

Account: EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Collected: 08/17/12



Lab Sample ID Analyte	Client Sample ID	Result/ Qual	ML	SDL	Units	Method
TC14956-1	WW24-SMI-081712					
Methane		0.0567	0.00050	0.00030	mg/l	RSKSOP-147/175
Ethane		0.00461	0.0010	0.00050	mg/l	RSKSOP-147/175

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID: WW24-SMI-081712	Date Sampled: 08/17/12
Lab Sample ID: TC14956-1	Date Received: 08/21/12
Matrix: AQ - Ground Water	Percent Solids: n/a
Method: SW846 8260B	
Project: Quarterly Well Sampling, Parker County, Texas	

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	K10044.D	1	08/23/12	EM	n/a	n/a	VK449
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

Purgeable Aromatics

CAS No.	Compound	Result	MQL	SDL	Units	Q
71-43-2	Benzene	0.00025 U	0.0010	0.00025	mg/l	
108-88-3	Toluene	0.00026 U	0.0010	0.00026	mg/l	
100-41-4	Ethylbenzene	0.00025 U	0.0010	0.00025	mg/l	
1330-20-7	Xylene (total)	0.00071 U	0.0030	0.00071	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	100%		79-122%
17060-07-0	1,2-Dichloroethane-D4	94%		75-121%
2037-26-5	Toluene-D8	102%		87-119%
460-00-4	4-Bromofluorobenzene	122%		80-133%

U = Not detected SDL - Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Page 1 of 1

Client Sample ID: WW24-SMI-081712	Date Sampled: 08/17/12
Lab Sample ID: TC14956-1	Date Received: 08/21/12
Matrix: AQ - Ground Water	Percent Solids: n/a
Method: RSKSOP-147/175	
Project: Quarterly Well Sampling, Parker County, Texas	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	SS003622.D	1	08/27/12	LT	n/a	n/a	GSS178
Run #2							

RSK147 Special List

CAS No.	Compound	Result	MQL	SDL	Units	Q
74-82-8	Methane	0.0567	0.00050	0.00030	mg/l	
74-85-1	Ethene	0.00050 U	0.0010	0.00050	mg/l	
74-84-0	Ethane	0.00461	0.0010	0.00050	mg/l	
74-98-6	Propane	0.00075 U	0.0015	0.00075	mg/l	
75-28-5	Isobutane	0.00075 U	0.0015	0.00075	mg/l	
106-97-8	Butane	0.00075 U	0.0015	0.00075	mg/l	

U = Not detected SDL - Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound



Misc. Forms

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Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody
- LRC Form

Accutest Job Number: TC14956 Client: EARTHCON CONSULTANTS Project: 2ND QUARTERLY
 Date / Time Received: 8/21/2012 Delivery Method: FedEx Airbill #'s: 801561645028
 No. Coolers: 1 Therm ID: IRGUN5 Temp Adjustment Factor: -0.4;
 Cooler Temps (Initial/Adjusted): #1: (2.8/2.4)

Cooler Security		<u>Y</u> or <u>N</u>		<u>Y</u> or <u>N</u>
1. Custody Seals Present:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3. COC Present:	<input checked="" type="checkbox"/> <input type="checkbox"/>
2. Custody Seals Intact:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	4. SmpI Dates/Time OK	<input checked="" type="checkbox"/> <input type="checkbox"/>
Cooler Temperature		<u>Y</u> or <u>N</u>		
1. Temp criteria achieved:	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
2. Cooler temp verification:				
3. Cooler media:	<u>Ice (Bag)</u>			
Quality Control Preservation	<u>Y</u> or <u>N</u>	<u>N/A</u>	<u>WTB</u>	<u>STB</u>
1. Trip Blank present / cooler:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Trip Blank listed on COC:	<input type="checkbox"/>	<input checked="" type="checkbox"/>		
3. Samples preserved properly:	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
4. VOCs headspace free:	<input checked="" type="checkbox"/>	<input type="checkbox"/>		

Sample Integrity - Documentation		<u>Y</u> or <u>N</u>	
1. Sample labels present on bottles:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
2. Container labeling complete:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
3. Sample container label / COC agree:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Sample Integrity - Condition		<u>Y</u> or <u>N</u>	
1. Sample recvd within HT:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
2. All containers accounted for:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
3. Condition of sample:	<u>Intact</u>		
Sample Integrity - Instructions		<u>Y</u> or <u>N</u> <u>N/A</u>	
1. Analysis requested is clear:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
2. Bottles received for unspecified tests	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
3. Sufficient volume recvd for analysis:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
4. Compositing instructions clear:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5. Filtering instructions clear:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Comments

 5.1
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TC14956: Chain of Custody
Page 2 of 3

Sample Receipt Log

Page 2 of 2

Job #: TC13879

Date / Time Received: 8/2/2012 9:50:00 AM

Initials: BG

Client: SPECTRA ENERGY

Cooler #	Sample ID:	Vol	Bot #	Location	Pres	pH	Therm ID	Initial Temp	Therm CF	Corrected Temp
1	TC13879-1	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-1	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-2	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-2	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-3	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-3	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-4	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-4	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-5	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-5	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-6	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-6	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1

 5.1
 5

TC14956: Chain of Custody
 Page 3 of 3

Appendix A Laboratory Data Package Cover Page

TC14956 This data package consists of

- ☐ This signature page, the laboratory review checklist, and the following reportable data:
- ☐ R1 Field chain-of-custody documentation;
- ☐ R2 Sample identification cross-reference;
- ☐ R3 Test reports (analytical data sheets) for each environmental sample that includes:
 - a) Items consistent with NELAC 5.13 or ISO/IEC 17025 Section 5.10
 - b) dilution factors,
 - c) preparation methods,
 - d) cleanup methods, and
 - e) if required for the project, tentatively identified compounds (TICs).
- ☐ R4 Surrogate recovery data including:
 - a) Calculated recovery (%R), and
 - b) The laboratory's surrogate QC limits.
- ☐ R5 Test reports/summary forms for blank samples;
- ☐ R6 Test reports/summary forms for laboratory control samples (LCSs) including:
 - a) LCS spiking amounts,
 - b) Calculated %R for each analyte, and
 - c) The laboratory's LCS QC limits.
- ☐ R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
 - a) Samples associated with the MS/MSD clearly identified,
 - b) MS/MSD spiking amounts,
 - c) Concentration of each MS/MSD analyte measured in the parent and
 - d) Calculated %Rs and relative percent differences (RPDs), and
 - e) The laboratory's MS/MSD QC limits
- ☐ R8 Laboratory analytical duplicate (if applicable) recovery and precision:
 - a) The amount of analyte measured in the duplicate,
 - b) The calculated RPD, and
 - c) The laboratory's QC limits for analytical duplicates.
- ☐ R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each
- ☐ R10 Other problems or anomalies.


The Exception Report for each "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Report. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratory in the Laboratory Review Checklist, and no information or data have been knowingly withheld.

Check, if applicable: This laboratory meets an exception under 30 TAC&25.6 and was last inspection by

☐ [X] TCEQ or ☐ _____ on April 2011. Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

QA Manager

Name (Printed)	Signature	Official Title (printed)	Date
Richard Rodriguez		Laboratory Director	8/29/2012

LABORATORY REVIEW CHECKLIST: REPORTABLE DATA											
Laboratory Name:		Accutest Gulf Coast Quarterly Well Sampling, Parker County, Texas			LRC Date:		8/29/2012				
Project Name:					Laboratory Project Number:		TC14956				
Reviewer Name:		Anita Patel			Prep Batch Number(s):		GSS178, VK449				
# ¹	A ²	DESCRIPTION					YES	NO	NA ³	NR ⁴	ER # ⁵
R1	OI	CHAIN-OF-CUSTODY (C-O-C):									
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?					X				
		Were all departures from standard conditions described in an exception report?					X				
R2	OI	Sample and quality control (QC) identification									
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?					X				
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?					X				
R3	OI	Test reports									
		Were samples prepared and analyzed within holding times?					X				
		Other than those results <MQL, were all other raw values bracketed by calibration standards?					X				
		Were calculations checked by a peer or supervisor?					X				
		Were all analyte identifications checked by a peer or supervisor?					X				
		Were sample detection limits reported for all analytes not detected?					X				
		Were all results for soil and sediment samples reported on a dry weight basis?							X		
		Were % moisture (or solids) reported for all soil and sediment samples?							X		
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW846 Method 5035?							X		
		If required for the project, are TIC's reported?							X		
R4	O	Surrogate recovery data									
		Were surrogates added prior to extraction?					X				
		Were surrogate percent recoveries in all samples within the laboratory QC limits?					X				
R5	OI	Test reports/summary forms for blank samples									
		Were appropriate type(s) of blanks analyzed?					X				
		Were blanks analyzed at the appropriate frequency?					X				
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?					X				
		Were blank concentrations <MQL?					X				
R6	OI	Laboratory control samples (LCS):									
		Were all COCs included in the LCS?					X				
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?					X				
		Were LCSs analyzed at required frequency?					X				
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?					X				
		Does the detectability check sample data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?					X				5
		Was the LCSD RPD within QC limits?							X		
R7	OI	Matrix spike (MS) and matrix spike duplicate (MSD) data									
		Were the project/method specified analytes included in the MS and MSD?					X				
		Were MS/MSD analyzed at the appropriate frequency?					X				
		Were MS (and MSD, if applicable) %Rs within the laboratory QC Limits?							X		4
		Were the MS/MSD RPDs within laboratory QC limits?					X				
R8	OI	Analytical duplicate data									
		Were appropriate analytical duplicates analyzed for each matrix?					X				
		Were analytical duplicates analyzed at the appropriate frequency?					X				
		Were RPDs or relative standard deviations within the laboratory QC limits?					X				
R9	OI	Method quantitation limits (MQLs):									
		Are the MQLs for each method analyte included in the laboratory data package?					X				
		Do the MQLs correspond to the concentration of the lowest non-zero calibration					X				
		Are unadjusted MQLs and DCs included in the laboratory data package?							X		2
R10	OI	Other problems/anomalies									
		Are all known problems/anomalies/special conditions noted in this LRC and ER?					X				
		Was applicable and available technology used to lower the SDL to minimize the					X				
		Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices, and methods associated with this laboratory data package?					X				3

Laboratory Name:		Accutest Gulf Coast	LRC Date:		8/29/2012	
Project Name:		Quarterly Well Sampling, Parker	Laboratory Project Number:		TC14956	
Reviewer Name:		Anita Patel	Prep Batch Number(s):		GSS178, VK449	
# ¹	A ²	DESCRIPTION	YES	NO	NA ³	NR ⁴ ER # ⁵
S1	OI	Initial calibration (ICAL)				
		Were response factors and/or relative response factors for each analyte within QC limits?	X			
		Were percent RSDs or correlation coefficient criteria met?	X			
		Was the number of standards recommended in the method used for all analytes?	X			
		Were all points generated between the lowest and highest standard used to calculate the curve?	X			
		Are ICAL data available for all instruments used?	X			
		Has the initial calibration curve been verified using an appropriate second source standard?	X			
S2	OI	Initial and continuing calibration verification (ICCV AND CCV) and continuing				
		Was the CCV analyzed at the method-required frequency?	X			
		Were percent differences for each analyte within the method-required QC limits?	X			
		Was the ICAL curve verified for each analyte?	X			
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?			X	
S3	O	Mass spectral tuning				
		Was the appropriate compound for the method used for tuning?	X			
		Were ion abundance data within the method-required QC limits?	X			
S4	O	Internal standards (IS)				
		Were IS area counts and retention times within the method-required QC limits?	X			
S5	OI	Raw data (NELAC Section 5.5.10)				
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X			
		Were data associated with manual integrations flagged on the raw data?	X			
S6	O	Dual column confirmation				
		Did dual column confirmation results meet the method-required QC?			X	
S7	O	Tentatively identified compounds (TICs):				
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X	
S8	I	Interference Check Sample (ICS) results				
		Were percent recoveries within method QC limits?			X	
S9	I	Serial dilutions, post digestion spikes, and method of standard additions				
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			X	
S10	OI	Method detection limit (MDL) studies				
		Was a MDL study performed for each reported analyte?	X			
		Is the MDL either adjusted or supported by the analysis of DCSs?	X			5
S11	OI	Proficiency test reports				
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X			
S12	OI	Standards documentation				
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate source?	X			
S13	OI	Compound/analyte identification procedures				
		Are the procedures for compound/analyte identification documented?	X			
S14	OI	Demonstration of analyst competency (DOC)				
		Was DOC conducted consistent with NELAC Chapter 5?	X			
		Is documentation of the analyst's competency up-to-date and on file?	X			
S15	OI	Verification/validation documentation for methods (NELAC Chapter 5)				
		Are all the methods used to generate the data documented, verified, and validated, where applicable?	X			
S16	OI	Laboratory standard operating procedures (SOPs)				
		Are laboratory SOPs current and on file for each method performed?	X			

LABORATORY REVIEW CHECKLIST (continued): Exception Reports			
Laboratory Name:		Accutest Gulf Coast	LRC Date:
			8/29/2012
Project Name:		Quarterly Well Sampling, Parker	Laboratory Project Number:
			TC14956
Reviewer Name:	Anita Patel	Prep Batch Number(s):	GSS178, VK449
ER# ¹	Description		
1	For reporting purposes, the MQL is defined in the report as the RL. The unadjusted MQL/RL is reported in the method blank. The SDL is defined in the report as the MDL.		
2	For reporting purposes, the method blank represents the unadjusted MQL. The DCS is on file in the laboratory and is not included in the laboratory data package.		
3	The laboratory is NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices, and methods associated with this laboratory data package for analytes that are listed in the Texas Fields of Accreditation.		
4	All anomalies are discussed in the case narrative.		
5	The Laboratory does not perform DCS analysis for Method RSKSOP-147/175. The components reported are not listed or do not have values in the Texas TRRP PCL tables.		

1ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked on

5.2

5

GC/MS Volatiles



QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Page 1 of 1

Job Number: TC14956

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VK449-MB	K10026.D	1	08/23/12	EM	n/a	n/a	VK449

The QC reported here applies to the following samples:

Method: SW846 8260B

TC14956-1

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.25	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.25	ug/l	
108-88-3	Toluene	ND	1.0	0.26	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.71	ug/l	

CAS No.	Surrogate Recoveries	Limits
1868-53-7	Dibromofluoromethane	101% 79-122%
17060-07-0	1,2-Dichloroethane-D4	96% 75-121%
2037-26-5	Toluene-D8	102% 87-119%
460-00-4	4-Bromofluorobenzene	123% 80-133%

6.1.1

6

Blank Spike Summary

Page 1 of 1

Job Number: TC14956

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VK449-BS	K10024.D	1	08/23/12	EM	n/a	n/a	VK449

The QC reported here applies to the following samples:

Method: SW846 8260B

TC14956-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2	Benzene	25	24.2	97	76-118
100-41-4	Ethylbenzene	25	25.2	101	75-112
108-88-3	Toluene	25	25.0	100	77-114
1330-20-7	Xylene (total)	75	76.6	102	75-111

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	99%	79-122%
17060-07-0	1,2-Dichloroethane-D4	95%	75-121%
2037-26-5	Toluene-D8	103%	87-119%
460-00-4	4-Bromofluorobenzene	123%	80-133%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: TC14956
Account: PESTXST EarthCon Consultants
Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC14974-3MS	K10030.D	1	08/23/12	EM	n/a	n/a	VK449
TC14974-3MSD	K10031.D	1	08/23/12	EM	n/a	n/a	VK449
TC14974-3 ^a	K10029.D	1	08/23/12	EM	n/a	n/a	VK449

The QC reported here applies to the following samples:

Method: SW846 8260B

TC14956-1

CAS No.	Compound	TC14974-3 ug/l	Spike Q	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	1.0 U	25	24.1	96	23.3	93	3	76-118/16
100-41-4	Ethylbenzene	1.0 U	25	25.1	100	24.2	97	4	75-112/12
108-88-3	Toluene	1.0 U	25	24.8	99	23.8	95	4	77-114/12
1330-20-7	Xylene (total)	3.0 U	75	74.8	100	73.2	98	2	75-111/12

CAS No.	Surrogate Recoveries	MS	MSD	TC14974-3	Limits
1868-53-7	Dibromofluoromethane	99%	99%	100%	79-122%
17060-07-0	1,2-Dichloroethane-D4	96%	95%	96%	75-121%
2037-26-5	Toluene-D8	103%	102%	102%	87-119%
460-00-4	4-Bromofluorobenzene	122%	122%	121%	80-133%

(a) Sample was not preserved to a pH < 2

* = Outside of Control Limits.

GC Volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Page 1 of 1

Job Number: TC14956

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GSS178-MB	SS003617.D	1	08/27/12	LT	n/a	n/a	GSS178

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC14956-1

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	ND	0.50	0.30	ug/l	
74-85-1	Ethene	ND	1.0	0.50	ug/l	
74-84-0	Ethane	ND	1.0	0.50	ug/l	
74-98-6	Propane	ND	1.5	0.75	ug/l	
75-28-5	Isobutane	ND	1.5	0.75	ug/l	
106-97-8	Butane	ND	1.5	0.75	ug/l	

7.1.1

7

Blank Spike Summary

Page 1 of 1

Job Number: TC14956

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GSS178-BS	SS003615.D	1	08/27/12	LT	n/a	n/a	GSS178

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC14956-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
74-82-8	Methane	21.5	20.8	97	70-130
74-85-1	Ethene	57.4	58.2	101	70-130
74-84-0	Ethane	43.3	41.8	97	70-130
74-98-6	Propane	60.6	56.5	93	70-130
75-28-5	Isobutane	72.5	71.1	98	70-130
106-97-8	Butane	76.6	73.7	96	70-130

* = Outside of Control Limits.

Matrix Spike Summary

Page 1 of 1

Job Number: TC14956
Account: PESTXST EarthCon Consultants
Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC14970-1MS	SS003620.D	1	08/27/12	LT	n/a	n/a	GSS178
TC14970-1	SS003618.D	1	08/27/12	LT	n/a	n/a	GSS178
TC14970-1	SS003621.D	10	08/27/12	LT	n/a	n/a	GSS178

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC14956-1

CAS No.	Compound	TC14970-1 ug/l	Spike Q	MS ug/l	MS %	Limits
74-82-8	Methane	914 ^b	21.5	600	-337* ^a	60-140
74-85-1	Ethene	1.0 U	57.4	58.8	102	60-140
74-84-0	Ethane	42.3	43.3	71.7	68	60-140
74-98-6	Propane	1.5 U	60.6	56.4	93	60-140
75-28-5	Isobutane	1.5 U	72.5	70.6	97	60-140
106-97-8	Butane	1.5 U	76.6	74.0	97	60-140

(a) Outside control limits due to high level in sample relative to spike amount.

(b) Result is from Run #2.

* = Outside of Control Limits.

Duplicate Summary

Page 1 of 1

Job Number: TC14956
Account: PESTXST EarthCon Consultants
Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC14970-1DUP	SS003619.D	1	08/27/12	LT	n/a	n/a	GSS178
TC14970-1	SS003618.D	1	08/27/12	LT	n/a	n/a	GSS178
TC14970-1	SS003621.D	10	08/27/12	LT	n/a	n/a	GSS178

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC14956-1

CAS No.	Compound	TC14970-1		Q	RPD	Limits
		ug/l	DUP ug/l			
74-82-8	Methane	914 ^a	869	E	26	30
74-85-1	Ethene	1.0 U	ND		nc	30
74-84-0	Ethane	42.3	57.4		30	30
74-98-6	Propane	1.5 U	ND		nc	30
75-28-5	Isobutane	1.5 U	ND		nc	30
106-97-8	Butane	1.5 U	ND		nc	30

(a) Result is from Run #2.

* = Outside of Control Limits.

ANALYSIS REPORT

Lab #: 261137 Job #: 19036
 Sample Name/Number: WW24-SMI-081712
 Company: Oil Tracers, LLC
 Date Sampled: 8/17/2012
 Container: Dissolved Gas Bottle
 Field/Site Name: Second Quarter Well Sampling
 Location: Parker County, TX
 Formation/Depth:
 Sampling Point:
 Date Received: 8/22/2012 Date Reported: 9/11/2012

Component	Chemical mol. %	$\delta^{13}\text{C}$ ‰	δD ‰	$\delta^{18}\text{O}$ ‰
Carbon Monoxide -----	nd			
Hydrogen Sulfide -----	na			
Helium -----	na			
Hydrogen -----	nd			
Argon -----	1.20			
Oxygen -----	15.67			
Nitrogen -----	82.07			
Carbon Dioxide -----	0.37			
Methane -----	0.675			
Ethane -----	0.0194			
Ethylene -----	nd			
Propane -----	0.0005			
Propylene -----	nd			
Iso-butane -----	nd			
N-butane -----	nd			
Iso-pentane -----	nd			
N-pentane -----	nd			
Hexanes + -----	nd			

Total BTU/cu.ft. dry @ 60deg F & 14.73psia, calculated: 7

Specific gravity, calculated: 0.993

Remarks:

Analysis is of gas extracted from water by headspace equilibration. Analysis has been corrected for helium added to create headspace. Helium dilution factor = 0.78

*Addition of helium negates the ability to detect native helium and may negate the ability to detect hydrogen.

nd = not detected. na = not analyzed. Isotopic composition of hydrogen is relative to VSMOW. Isotopic composition of carbon is relative to VPDB. Isotopic composition of oxygen is relative to VSMOW, except for carbon dioxide which is relative to VPDB. Calculations for BTU and specific gravity per ASTM D3588. Chemical compositions are normalized to 100%. Mol. % is approximately equal to vol. %.



08/31/12

Technical Report for

EarthCon Consultants

Quarterly Well Sampling, Parker County, Texas

2nd Quarter / WW13-STR

Accutest Job Number: TC14969

Sampling Date: 08/18/12

Report to:

EarthCon Consultants
4800 Sugar Grove Suite 420
Stafford, TX 77477
gfloreslovo@earthcon.com; djackson@jacksonsjoberg.com;
mcpatton@rangeresources.com; escott@earthcon.com
ATTN: Gabriela Floreslovo

Total number of pages in report: **25**



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.


Richard Rodriguez
Laboratory Director

Client Service contact: Elessa Sommers 713-271-4700

Certifications: TX (T104704220-12-8) AR (11-028-0) AZ (AZ0769) FL (E87628) KS (E-10366)
LA (85695/04004) OK (211-035)

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Test results relate only to samples analyzed.

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Sample Summary

EarthCon Consultants

Job No: TC14969

Quarterly Well Sampling, Parker County, Texas
Project No: 2nd Quarter / WW13-STR

Sample Number	Collected		Time By	Received	Matrix		Client Sample ID
	Date				Code	Type	
TC14969-1	08/18/12	11:55		08/21/12	AQ	Ground Water	WW13-STR-081812



SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: EarthCon Consultants

Job No TC14969

Site: Quarterly Well Sampling, Parker County, Texas

Report Date 8/31/2012 6:55:29 PM

1 Sample was collected on 08/18/2012 and received intact at Accutest on 08/21/2012 and properly preserved in 1 cooler at 1.9 Deg C. The sample received an Accutest job number of TC14969. A listing of the Laboratory Sample ID, Client Sample ID and date of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

Volatiles by GCMS By Method SW846 8260B

Matrix AQ	Batch ID: VZ3732
------------------	-------------------------

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC14970-1MS, TC14970-1MSD were used as the QC samples indicated.

Volatiles by GC By Method RSKSOP-147/175

Matrix AQ	Batch ID: GSS178
------------------	-------------------------

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC14970-1DUP, TC14970-1MS were used as the QC samples indicated.
- Matrix Spike Recovery for Methane is outside control limits. Outside control limits due to high level in sample relative to spike amount.

Accutest Laboratories Gulf Coast (ALGC) certifies that this report meets the project requirements for analytical data produced for the samples as received at ALGC and as stated on the COC. ALGC certifies that the data meets the Data Quality Objectives for precision, accuracy and completeness as specified in the ALGC Quality Manual except as noted above. This report is to be used in its entirety. ALGC is not responsible for any assumptions of data quality if partial data packages are used

Summary of Hits

Page 1 of 1

Job Number: TC14969

Account: EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Collected: 08/18/12



Lab Sample ID Analyte	Client Sample ID	Result/ Qual	MQL	SDL	Units	Method
TC14969-1	WW13-STR-081812					
Methane		3.48	0.025	0.015	mg/l	RSKSOP-147/175
Ethane		0.334	0.0010	0.00050	mg/l	RSKSOP-147/175



Sample Results

Report of Analysis

Report of Analysis

Page 1 of 1

Client Sample ID:	WW13-STR-081812	Date Sampled:	08/18/12
Lab Sample ID:	TC14969-1	Date Received:	08/21/12
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260B		
Project:	Quarterly Well Sampling, Parker County, Texas		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Z028329.D	1	08/24/12	AK	n/a	n/a	VZ3732
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

Purgeable Aromatics

CAS No.	Compound	Result	MQL	SDL	Units	Q
71-43-2	Benzene	0.00025 U	0.0010	0.00025	mg/l	
108-88-3	Toluene	0.00026 U	0.0010	0.00026	mg/l	
100-41-4	Ethylbenzene	0.00025 U	0.0010	0.00025	mg/l	
1330-20-7	Xylene (total)	0.00071 U	0.0030	0.00071	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	103%		79-122%
17060-07-0	1,2-Dichloroethane-D4	91%		75-121%
2037-26-5	Toluene-D8	104%		87-119%
460-00-4	4-Bromofluorobenzene	112%		80-133%

U = Not detected SDL - Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: WW13-STR-081812

Lab Sample ID: TC14969-1

Date Sampled: 08/18/12

Matrix: AQ - Ground Water

Date Received: 08/21/12

Method: RSKSOP-147/175

Percent Solids: n/a

Project: Quarterly Well Sampling, Parker County, Texas

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	SS003639.D	1	08/27/12	LT	n/a	n/a	GSS178
Run #2	SS003640.D	50	08/27/12	LT	n/a	n/a	GSS178

RSK147 Special List

CAS No.	Compound	Result	ML	SDL	Units	Q
74-82-8	Methane	3.48 ^a	0.025	0.015	mg/l	
74-85-1	Ethene	0.00050 U	0.0010	0.00050	mg/l	
74-84-0	Ethane	0.334	0.0010	0.00050	mg/l	
74-98-6	Propane	0.00075 U	0.0015	0.00075	mg/l	
75-28-5	Isobutane	0.00075 U	0.0015	0.00075	mg/l	
106-97-8	Butane	0.00075 U	0.0015	0.00075	mg/l	

(a) Result is from Run# 2

U = Not detected SDL - Sample Detection Limit
 ML = Method Quantitation Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Misc. Forms



Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody
- LRC Form



CHAIN OF CUSTODY

PAGE ___ OF ___

19165 Harwin Dr. Ste 150 Houston, TX 77036
TEL: 713-271-4700 FAX: 713-271-4770
www.accutest.com

PED-EX Tracking #		Bottle Order Control #	
Accutest Order #		Accutest Job #	
TC14969		TC14969	
Requested Analyses		Matrix Codes	
Butane, Ethane, Ethene, Isobutane, Methane, Propane by RSK-175		DW - Drinking Water GW - Ground Water WW - Water SW - Surface Water SO - Soil SL - Sludge SED - Sediment OI - Oil LIQ - Other Liquid AIR - Air SOL - Other Solid WP - Wipe FB - Field Blank	
BTX 9260B		LAB USE ONLY	

Client / Reporting Information		Project Information	
Company Name EarthCon Consultants, Inc.		Project Name Second Quarterly Well Sampling, Parker County, Texas	
Street Address 4800 Sugar Grove Blvd., Suite 390		Street	
City State Zip Stafford TX 77477		City State	
Project Contact Gabriela Floreslovo		Billing Information (If different from Report to) Company Name	
Phone # 281-201-3513		Street Address	
Fax # E-mail		City State Zip	
Sampler(s) Name(s) JALIE HEUFERICH (512) 632-5380		Client Purchase Order #	
Phone #		Attention:	
Project Manager			
Field ID / Point of Collection		Collection	
Date		Time	
Sampled By		Mark	
# of bottles			
H2O		H2O2	
H2O3		H2O4	
H2O5		H2O6	
H2O7		H2O8	
H2O9		H2O10	
H2O11		H2O12	
H2O13		H2O14	
H2O15		H2O16	
H2O17		H2O18	
H2O19		H2O20	
H2O21		H2O22	
H2O23		H2O24	
H2O25		H2O26	
H2O27		H2O28	
H2O29		H2O30	
H2O31		H2O32	
H2O33		H2O34	
H2O35		H2O36	
H2O37		H2O38	
H2O39		H2O40	
H2O41		H2O42	
H2O43		H2O44	
H2O45		H2O46	
H2O47		H2O48	
H2O49		H2O50	
H2O51		H2O52	
H2O53		H2O54	
H2O55		H2O56	
H2O57		H2O58	
H2O59		H2O60	
H2O61		H2O62	
H2O63		H2O64	
H2O65		H2O66	
H2O67		H2O68	
H2O69		H2O70	
H2O71		H2O72	
H2O73		H2O74	
H2O75		H2O76	
H2O77		H2O78	
H2O79		H2O80	
H2O81		H2O82	
H2O83		H2O84	
H2O85		H2O86	
H2O87		H2O88	
H2O89		H2O90	
H2O91		H2O92	
H2O93		H2O94	
H2O95		H2O96	
H2O97		H2O98	
H2O99		H2O100	
H2O101		H2O102	
H2O103		H2O104	
H2O105		H2O106	
H2O107		H2O108	
H2O109		H2O110	
H2O111		H2O112	
H2O113		H2O114	
H2O115		H2O116	
H2O117		H2O118	
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H2O127		H2O128	
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H2O149		H2O150	
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H2O703		H2O704	
H2O705		H2O706	
H2O707		H2O708	
H2O709		H2O710	
H2O711		H2O712	
H2O713		H2O714	
H2O715		H2O716	
H2O717		H2O718	
H2O719		H2O720	

Accutest Laboratories Sample Receipt Summary

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Accutest Job Number: TC14969 Client: EARTHCON CONSULTANTS Project: 2ND QUARTERLY
 Date / Time Received: 8/21/2012 Delivery Method: FedEx Airbill #'s: 801561645028
 No. Coolers: 1 Therm ID: IRGUN5 Temp Adjustment Factor: -0.4;
 Cooler Temps (Initial/Adjusted): #1: (2.3/1.9)

Cooler Security		Y or N		Y or N	
1. Custody Seals Present:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3. COC Present:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Custody Seals Intact:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	4. Smp'l Dates/Time OK	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Cooler Temperature		Y or N			
1. Temp criteria achieved:	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
2. Cooler temp verification:					
3. Cooler media:	<u>Ice (Bag)</u>				
Quality Control Preservation	Y	or	N	N/A	
1. Trip Blank present / cooler:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/> <input type="checkbox"/>
2. Trip Blank listed on COC:	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input type="checkbox"/>	
3. Samples preserved properly:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	
4. VOCs headspace free:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	

Sample Integrity - Documentation		Y	or	N	
1. Sample labels present on bottles:	<input checked="" type="checkbox"/>		<input type="checkbox"/>		
2. Container labeling complete:	<input checked="" type="checkbox"/>		<input type="checkbox"/>		
3. Sample container label / COC agree:	<input checked="" type="checkbox"/>		<input type="checkbox"/>		
Sample Integrity - Condition		Y	or	N	
1. Sample recvd within HT:	<input checked="" type="checkbox"/>		<input type="checkbox"/>		
2. All containers accounted for:	<input checked="" type="checkbox"/>		<input type="checkbox"/>		
3. Condition of sample:	<u>Intact</u>				
Sample Integrity - Instructions		Y	or	N	N/A
1. Analysis requested is clear:	<input checked="" type="checkbox"/>		<input type="checkbox"/>		
2. Bottles received for unspecified tests	<input type="checkbox"/>		<input checked="" type="checkbox"/>		
3. Sufficient volume recvd for analysis:	<input checked="" type="checkbox"/>		<input type="checkbox"/>		
4. Compositing instructions clear:	<input type="checkbox"/>		<input type="checkbox"/>		<input checked="" type="checkbox"/>
5. Filtering instructions clear:	<input type="checkbox"/>		<input type="checkbox"/>		<input checked="" type="checkbox"/>

Comments

TC14969: Chain of Custody
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Sample Receipt Log

Page 2 of 2

Job #: TC13879

Date / Time Received: 8/2/2012 9:50:00 AM

Initials: BG

Client: SPECTRA ENERGY

Cooler #	Sample ID:	Vol	Bot #	Location	Pres	pH	Therm ID	Initial Temp	Therm CF	Corrected Temp
1	TC13879-1	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-1	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-2	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-2	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-3	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-3	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-4	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-4	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-5	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-5	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-6	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-6	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1

5.1

5

TC14969: Chain of Custody
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Appendix A Laboratory Data Package Cover Page

TC14969 This data package consists of

- ☐ This signature page, the laboratory review checklist, and the following reportable data:
- ☐ R1 Field chain-of-custody documentation;
- ☐ R2 Sample identification cross-reference;
- ☐ R3 Test reports (analytical data sheets) for each environmental sample that includes:
 - a) Items consistent with NELAC 5.13 or ISO/IEC 17025 Section 5.10
 - b) dilution factors,
 - c) preparation methods,
 - d) cleanup methods, and
 - e) if required for the project, tentatively identified compounds (TICs).
- ☐ R4 Surrogate recovery data including:
 - a) Calculated recovery (%R), and
 - b) The laboratory's surrogate QC limits.
- ☐ R5 Test reports/summary forms for blank samples;
- ☐ R6 Test reports/summary forms for laboratory control samples (LCSs) including:
 - a) LCS spiking amounts,
 - b) Calculated %R for each analyte, and
 - c) The laboratory's LCS QC limits.
- ☐ R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
 - a) Samples associated with the MS/MSD clearly identified,
 - b) MS/MSD spiking amounts,
 - c) Concentration of each MS/MSD analyte measured in the parent and
 - d) Calculated %Rs and relative percent differences (RPDs), and
 - e) The laboratory's MS/MSD QC limits
- ☐ R8 Laboratory analytical duplicate (if applicable) recovery and precision:
 - a) The amount of analyte measured in the duplicate,
 - b) The calculated RPD, and
 - c) The laboratory's QC limits for analytical duplicates.
- ☐ R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each
- ☐ R10 Other problems or anomalies.

The Exception Report for each "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Report. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratory in the Laboratory Review Checklist, and no information or data have been knowingly withheld.

Check, if applicable: This laboratory meets an exception under 30 TAC&25.6 and was last inspection by

☐ [X] TCEQ or ☐ _____ on April 2011. Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

QA Manager

Name (Printed)

Signature

Official Title (printed)

Date

Richard Rodriguez



Laboratory Director

8/29/2012

LABORATORY REVIEW CHECKLIST: REPORTABLE DATA									
Laboratory Name:		Accutest Gulf Coast		LRC Date:		8/29/2012			
Project Name:		Quarterly Well Sampling, Parker County, Texas		Laboratory Project Number:		TC14969			
Reviewer Name:		Anita Patel		Prep Batch Number(s):		GSS178, VZ3732			
# ¹	A ²	DESCRIPTION				YES	NO	NA ³	NR ⁴ ER # ⁵
R1	OI	CHAIN-OF-CUSTODY (C-O-C):							
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?				X			
		Were all departures from standard conditions described in an exception report?				X			
R2	OI	Sample and quality control (QC) Identification							
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?				X			
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?				X			
R3	OI	Test reports							
		Were samples prepared and analyzed within holding times?				X			
		Other than those results <MQL, were all other raw values bracketed by calibration standards?				X			
		Were calculations checked by a peer or supervisor?				X			
		Were all analyte identifications checked by a peer or supervisor?				X			
		Were sample detection limits reported for all analytes not detected?				X			
		Were all results for soil and sediment samples reported on a dry weight basis?						X	
		Were % moisture (or solids) reported for all soil and sediment samples?						X	
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW846 Method 5035?						X	
		If required for the project, are TIC's reported?						X	
R4	O	Surrogate recovery data							
		Were surrogates added prior to extraction?				X			
		Were surrogate percent recoveries in all samples within the laboratory QC limits?				X			
R5	OI	Test reports/summary forms for blank samples							
		Were appropriate type(s) of blanks analyzed?				X			
		Were blanks analyzed at the appropriate frequency?				X			
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?				X			
		Were blank concentrations <MQL?				X			
R6	OI	Laboratory control samples (LCS):							
		Were all COCs included in the LCS?				X			
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?				X			
		Were LCSs analyzed at required frequency?				X			
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?				X			
		Does the detectability check sample data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?				X			5
		Was the LCSD RPD within QC limits?						X	
R7	OI	Matrix spike (MS) and matrix spike duplicate (MSD) data							
		Were the project/method specified analytes included in the MS and MSD?				X			
		Were MS/MSD analyzed at the appropriate frequency?				X			
		Were MS (and MSD, if applicable) %Rs within the laboratory QC Limits?					X		4
		Were the MS/MSD RPDs within laboratory QC limits?				X			
R8	OI	Analytical duplicate data							
		Were appropriate analytical duplicates analyzed for each matrix?				X			
		Were analytical duplicates analyzed at the appropriate frequency?				X			
		Were RPDs or relative standard deviations within the laboratory QC limits?				X			
R9	OI	Method quantitation limits (MQLs):							
		Are the MQLs for each method analyte included in the laboratory data package?				X			
		Do the MQLs correspond to the concentration of the lowest non-zero calibration				X			
		Are unadjusted MQLs and DCSs included in the laboratory data package?					X		2
R10	OI	Other problems/anomalies							
		Are all known problems/anomalies/special conditions noted in this LRC and ER?				X			
		Was applicable and available technology used to lower the SDL to minimize the				X			
		Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices, and methods associated with this laboratory data package?				X			3

Laboratory Name:		Accutest Gulf Coast	LRC Date:		8/29/2012	
Project Name:		Quarterly Well Sampling, Parker	Laboratory Project Number:		TC14969	
Reviewer Name:		Anita Patel	Prep Batch Number(s):		GSS178, VZ3732	
# ¹	A ²	DESCRIPTION	YES	NO	NA ³	NR ⁴ ER # ⁵
S1	OI	Initial calibration (ICAL)				
		Were response factors and/or relative response factors for each analyte within QC limits?	X			
		Were percent RSDs or correlation coefficient criteria met?	X			
		Was the number of standards recommended in the method used for all analytes?	X			
		Were all points generated between the lowest and highest standard used to calculate the curve?	X			
		Are ICAL data available for all instruments used?	X			
		Has the initial calibration curve been verified using an appropriate second source standard?	X			
S2	OI	Initial and continuing calibration verification (ICCV AND CCV) and continuing				
		Was the CCV analyzed at the method-required frequency?	X			
		Were percent differences for each analyte within the method-required QC limits?	X			
		Was the ICAL curve verified for each analyte?	X			
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?			X	
S3	O	Mass spectral tuning				
		Was the appropriate compound for the method used for tuning?	X			
		Were ion abundance data within the method-required QC limits?	X			
S4	O	Internal standards (IS)				
		Were IS area counts and retention times within the method-required QC limits?	X			
S5	OI	Raw data (NELAC Section 5.5.10)				
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X			
		Were data associated with manual integrations flagged on the raw data?	X			
S6	O	Dual column confirmation				
		Did dual column confirmation results meet the method-required QC?			X	
S7	O	Tentatively identified compounds (TICs):				
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X	
S8	I	Interference Check Sample (ICS) results				
		Were percent recoveries within method QC limits?			X	
S9	I	Serial dilutions, post digestion spikes, and method of standard additions				
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			X	
S10	OI	Method detection limit (MDL) studies				
		Was a MDL study performed for each reported analyte?	X			
		Is the MDL either adjusted or supported by the analysis of DCSs?	X			5
S11	OI	Proficiency test reports				
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X			
S12	OI	Standards documentation				
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate source?	X			
S13	OI	Compound/analyte identification procedures				
		Are the procedures for compound/analyte identification documented?	X			
S14	OI	Demonstration of analyst competency (DOC)				
		Was DOC conducted consistent with NELAC Chapter 5?	X			
		Is documentation of the analyst's competency up-to-date and on file?	X			
S15	OI	Verification/validation documentation for methods (NELAC Chapter 5)				
		Are all the methods used to generate the data documented, verified, and validated, where applicable?	X			
S16	OI	Laboratory standard operating procedures (SOPs)				
		Are laboratory SOPs current and on file for each method performed?	X			

LABORATORY REVIEW CHECKLIST (continued): Exception Reports			
Laboratory Name:		Accutest Gulf Coast	LRC Date:
Project Name:		Quarterly Well Sampling, Parker	Laboratory Project Number:
Reviewer Name:		Anita Patel	Prep Batch Number(s):
			8/29/2012
			TC14969
			GSS178, VZ3732
ER# ¹	Description		
1	For reporting purposes, the MQL is defined in the report as the RL. The unadjusted MQL/RL is reported in the method blank. The SDL is defined in the report as the MDL.		
2	For reporting purposes, the method blank represents the unadjusted MQL. The DCS is on file in the laboratory and is not included in the laboratory data package.		
3	The laboratory is NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices, and methods associated with this laboratory data package for analytes that are listed in the Texas Fields of Accreditation.		
4	All anomalies are discussed in the case narrative.		
5	The Laboratory does not perform DCS analysis for Method RSKSOP-147/175. The components reported are not listed or do not have values in the Texas TRRP PCL tables.		

1ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked on

5.2

5

GC/MS Volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries



Method Blank Summary

Page 1 of 1

Job Number: TC14969

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VZ3732-MB	Z028313.D	1	08/24/12	AK	n/a	n/a	VZ3732

The QC reported here applies to the following samples:

Method: SW846 8260B

TC14969-1

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.25	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.25	ug/l	
108-88-3	Toluene	ND	1.0	0.26	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.71	ug/l	

CAS No.	Surrogate Recoveries	Limits
1868-53-7	Dibromofluoromethane	106% 79-122%
17060-07-0	1,2-Dichloroethane-D4	98% 75-121%
2037-26-5	Toluene-D8	106% 87-119%
460-00-4	4-Bromofluorobenzene	114% 80-133%

6.1.1

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Blank Spike Summary

Page 1 of 1

Job Number: TC14969

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VZ3732-BS	Z028311.D	1	08/24/12	AK	n/a	n/a	VZ3732

The QC reported here applies to the following samples:

Method: SW846 8260B

TC14969-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2	Benzene	25	23.5	94	76-118
100-41-4	Ethylbenzene	25	23.6	94	75-112
108-88-3	Toluene	25	23.2	93	77-114
1330-20-7	Xylene (total)	75	70.6	94	75-111

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	99%	79-122%
17060-07-0	1,2-Dichloroethane-D4	90%	75-121%
2037-26-5	Toluene-D8	103%	87-119%
460-00-4	4-Bromofluorobenzene	109%	80-133%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: TC14969

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC14970-1MS	Z028320.D	1	08/24/12	AK	n/a	n/a	VZ3732
TC14970-1MSD	Z028321.D	1	08/24/12	AK	n/a	n/a	VZ3732
TC14970-1	Z028319.D	1	08/24/12	AK	n/a	n/a	VZ3732

The QC reported here applies to the following samples:

Method: SW846 8260B

TC14969-1

CAS No.	Compound	TC14970-1 ug/l	Q	Spike ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	1.0 U		25	24.5	98	24.2	97	1	76-118/16
100-41-4	Ethylbenzene	1.0 U		25	24.7	99	23.7	95	4	75-112/12
108-88-3	Toluene	1.0 U		25	24.4	98	24.1	96	1	77-114/12
1330-20-7	Xylene (total)	3.0 U		75	74.1	99	72.6	97	2	75-111/12

CAS No.	Surrogate Recoveries	MS	MSD	TC14970-1	Limits
1868-53-7	Dibromofluoromethane	107%	106%	104%	79-122%
17060-07-0	1,2-Dichloroethane-D4	94%	93%	96%	75-121%
2037-26-5	Toluene-D8	107%	107%	107%	87-119%
460-00-4	4-Bromofluorobenzene	113%	113%	113%	80-133%

* = Outside of Control Limits.

GC Volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

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Method Blank Summary

Page 1 of 1

Job Number: TC14969

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GSS178-MB	SS003617.D	1	08/27/12	LT	n/a	n/a	GSS178

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC14969-1

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	ND	0.50	0.30	ug/l	
74-85-1	Ethene	ND	1.0	0.50	ug/l	
74-84-0	Ethane	ND	1.0	0.50	ug/l	
74-98-6	Propane	ND	1.5	0.75	ug/l	
75-28-5	Isobutane	ND	1.5	0.75	ug/l	
106-97-8	Butane	ND	1.5	0.75	ug/l	

7.1.1

7

Blank Spike Summary

Page 1 of 1

Job Number: TC14969

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GSS178-BS	SS003615.D	1	08/27/12	LT	n/a	n/a	GSS178

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC14969-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
74-82-8	Methane	21.5	20.8	97	70-130
74-85-1	Ethene	57.4	58.2	101	70-130
74-84-0	Ethane	43.3	41.8	97	70-130
74-98-6	Propane	60.6	56.5	93	70-130
75-28-5	Isobutane	72.5	71.1	98	70-130
106-97-8	Butane	76.6	73.7	96	70-130

* = Outside of Control Limits.

Matrix Spike Summary

Page 1 of 1

Job Number: TC14969

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC14970-1MS	SS003620.D	1	08/27/12	LT	n/a	n/a	GSS178
TC14970-1	SS003618.D	1	08/27/12	LT	n/a	n/a	GSS178
TC14970-1	SS003621.D	10	08/27/12	LT	n/a	n/a	GSS178

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC14969-1

CAS No.	Compound	TC14970-1 ug/l	Spike Q	MS ug/l	MS %	Limits
74-82-8	Methane	914 ^b	21.5	600	-337* ^a	60-140
74-85-1	Ethene	1.0 U	57.4	58.8	102	60-140
74-84-0	Ethane	42.3	43.3	71.7	68	60-140
74-98-6	Propane	1.5 U	60.6	56.4	93	60-140
75-28-5	Isobutane	1.5 U	72.5	70.6	97	60-140
106-97-8	Butane	1.5 U	76.6	74.0	97	60-140

(a) Outside control limits due to high level in sample relative to spike amount.

(b) Result is from Run #2.

* = Outside of Control Limits.

Duplicate Summary

Page 1 of 1

Job Number: TC14969

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC14970-1DUP	SS003619.D	1	08/27/12	LT	n/a	n/a	GSS178
TC14970-1	SS003618.D	1	08/27/12	LT	n/a	n/a	GSS178
TC14970-1	SS003621.D	10	08/27/12	LT	n/a	n/a	GSS178

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC14969-1

CAS No.	Compound	TC14970-1	DUP	Q	RPD	Limits
		ug/l	ug/l			
74-82-8	Methane	914 ^a	869	E	26	30
74-85-1	Ethene	1.0 U	ND		nc	30
74-84-0	Ethane	42.3	57.4		30	30
74-98-6	Propane	1.5 U	ND		nc	30
75-28-5	Isobutane	1.5 U	ND		nc	30
106-97-8	Butane	1.5 U	ND		nc	30

(a) Result is from Run #2.

* = Outside of Control Limits.

Lab #: 261144 Job #: 19036
 Sample Name/Number: WW13-STR-081812
 Company: Oil Tracers, LLC
 Date Sampled: 8/18/2012
 Container: Dissolved Gas Bottle
 Field/Site Name: Second Quarter Well Sampling
 Location: Parker County, TX
 Formation/Depth:
 Sampling Point:
 Date Received: 8/22/2012 Date Reported: 9/11/2012

Component	Chemical mol. %	$\delta^{13}\text{C}$ ‰	δD ‰	$\delta^{18}\text{O}$ ‰
Carbon Monoxide -----	nd			
Hydrogen Sulfide -----	na			
Helium -----	na			
Hydrogen -----	nd			
Argon -----	0.212			
Oxygen -----	0.019			
Nitrogen -----	60.18			
Carbon Dioxide -----	0.47			
Methane -----	37.22	-45.74	-173.6	
Ethane -----	1.89	-31.15		
Ethylene -----	nd			
Propane -----	0.0004			
Propylene -----	nd			
Iso-butane -----	nd			
N-butane -----	0.0019			
Iso-pentane -----	0.0011			
N-pentane -----	nd			
Hexanes + -----	0.0008			

Total BTU/cu.ft. dry @ 60deg F & 14.73psia, calculated: 411

Specific gravity, calculated: 0.818

Remarks:

Analysis is of gas extracted from water by headspace equilibration. Analysis has been corrected for helium added to create headspace. Helium dilution factor = 0.73

*Addition of helium negates the ability to detect native helium and may negate the ability to detect hydrogen.

nd = not detected. na = not analyzed. Isotopic composition of hydrogen is relative to VSMOW. Isotopic composition of carbon is relative to VPDB. Isotopic composition of oxygen is relative to VSMOW, except for carbon dioxide which is relative to VPDB. Calculations for BTU and specific gravity per ASTM D3588. Chemical compositions are normalized to 100%. Mol. % is approximately equal to vol. %.



09/06/12

Technical Report for

EarthCon Consultants

Quarterly Well Sampling, Parker County, Texas

2nd Quarter / WW18-STR

Accutest Job Number: TC15481

Sampling Date: 08/28/12

Report to:

EarthCon Consultants
4800 Sugar Grove Suite 420
Stafford, TX 77477
gfloreslovo@earthcon.com; djackson@jacksonsjoberg.com;
mcpatton@rangeresources.com; escott@earthcon.com
ATTN: Gabriela Floreslovo

Total number of pages in report: **25**



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.


Richard Rodriguez
Laboratory Director

Client Service contact: Elessa Sommers 713-271-4700

Certifications: TX (T104704220-12-8) AR (11-028-0) AZ (AZ0769) FL (E87628) KS (E-10366)
LA (85695/04004) OK (211-035)

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Test results relate only to samples analyzed.

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Sample Summary

EarthCon Consultants

Job No: TC15481

Quarterly Well Sampling, Parker County, Texas
Project No: 2nd Quarter / WW18-STR

Sample Number	Collected Date	Time By	Received	Matrix Code Type	Client Sample ID
TC15481-1	08/28/12	13:50	08/29/12	AQ Ground Water	WW18-STR-082812



SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: EarthCon Consultants

Job No TC15481

Site: Quarterly Well Sampling, Parker County, Texas

Report Date 9/6/2012 5:50:17 PM

1 Sample was collected on 08/28/2012 and received intact at Accutest on 08/29/2012 and properly preserved in 1 cooler at 3.3 Deg C. The sample received an Accutest job number of TC15481. A listing of the Laboratory Sample ID, Client Sample ID and date of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

Volatiles by GCMS By Method SW846 8260B

Matrix AQ	Batch ID: VC1174
------------------	-------------------------

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC15249-4MS, TC15249-4MSD were used as the QC samples indicated.

Volatiles by GC By Method RSKSOP-147/175

Matrix AQ	Batch ID: GSS181
------------------	-------------------------

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC15494-1MS, TC15494-2DUP were used as the QC samples indicated.

Accutest Laboratories Gulf Coast (ALGC) certifies that this report meets the project requirements for analytical data produced for the samples as received at ALGC and as stated on the COC. ALGC certifies that the data meets the Data Quality Objectives for precision, accuracy and completeness as specified in the ALGC Quality Manual except as noted above. This report is to be used in its entirety. ALGC is not responsible for any assumptions of data quality if partial data packages are used

Summary of Hits

Page 1 of 1

Job Number: TC15481

Account: EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Collected: 08/28/12



Lab Sample ID Analyte	Client Sample ID	Result/ Qual	ML	SDL	Units	Method
TC15481-1	WW18-STR-082812					
Methane		0.944	0.0050	0.0030	mg/l	RSKSOP-147/175
Ethane		0.0512	0.0010	0.00050	mg/l	RSKSOP-147/175



Sample Results

Report of Analysis

Report of Analysis

Client Sample ID: WW18-STR-082812

Lab Sample ID: TC15481-1

Date Sampled: 08/28/12

Matrix: AQ - Ground Water

Date Received: 08/29/12

Method: SW846 8260B

Percent Solids: n/a

Project: Quarterly Well Sampling, Parker County, Texas

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	C00255003.D	1	08/31/12	CF	n/a	n/a	VC1174
Run #2							

Purge Volume

Run #1 5.0 ml

Run #2

Purgeable Aromatics

CAS No.	Compound	Result	MQL	SDL	Units	Q
71-43-2	Benzene	0.00034 U	0.0010	0.00034	mg/l	
108-88-3	Toluene	0.00033 U	0.0010	0.00033	mg/l	
100-41-4	Ethylbenzene	0.00032 U	0.0010	0.00032	mg/l	
1330-20-7	Xylene (total)	0.00087 U	0.0030	0.00087	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	94%		72-122%
17060-07-0	1,2-Dichloroethane-D4	89%		68-124%
2037-26-5	Toluene-D8	99%		80-119%
460-00-4	4-Bromofluorobenzene	95%		72-126%

U = Not detected SDL - Sample Detection Limit
 MQL = Method Quantitation Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Page 1 of 1

Client Sample ID: WW18-STR-082812

Lab Sample ID: TC15481-1

Date Sampled: 08/28/12

Matrix: AQ - Ground Water

Date Received: 08/29/12

Method: RSKSOP-147/175

Percent Solids: n/a

Project: Quarterly Well Sampling, Parker County, Texas

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	SS003716.D	1	09/04/12	LT	n/a	n/a	GSS181
Run #2	SS003717.D	10	09/04/12	LT	n/a	n/a	GSS181

RSK147 Special List

CAS No.	Compound	Result	MQL	SDL	Units	Q
74-82-8	Methane	0.944 ^a	0.0050	0.0030	mg/l	
74-85-1	Ethene	0.00050 U	0.0010	0.00050	mg/l	
74-84-0	Ethane	0.0512	0.0010	0.00050	mg/l	
74-98-6	Propane	0.00075 U	0.0015	0.00075	mg/l	
75-28-5	Isobutane	0.00075 U	0.0015	0.00075	mg/l	
106-97-8	Butane	0.00075 U	0.0015	0.00075	mg/l	

(a) Result is from Run# 2

U = Not detected SDL - Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Misc. Forms

5

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody
- LRC Form

10165 Harwin Dr. Ste 150 Houston, TX 77036
TEL: 713-271-4700 FAX: 713-271-4770
www.accutest.com

[illegible]

5.1

TC15481: Chain of Custody
Page 1 of 3



Accutest Laboratories Sample Receipt Summary

Page 1 of 2

Accutest Job Number: TC15481 Client: EARTHCON Project: 2ND QTRLY WELL SAMPLING, PARKER COUNT
Date / Time Received: 8/29/2012 Delivery Method: Airbill #s:
No. Coolers: 1 Therm ID: IRGUN5 Temp Adjustment Factor: -0.4
Cooler Temps (Initial/Adjusted): #1: (3.7/3.3)

Cooler Security

Y or N

- | | | | | | |
|---------------------------|-------------------------------------|--------------------------|-----------------------|-------------------------------------|--------------------------|
| 1. Custody Seals Present: | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 3. COC Present: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Custody Seals Intact: | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 4. Smpl Dates/Time OK | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

Cooler Temperature

Y or N

- | | | |
|------------------------------|-------------------------------------|--------------------------|
| 1. Temp criteria achieved: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Cooler temp verification: | | |
| 3. Cooler media: | Ice (Bag) | |

Quality Control Preservation

Y or N

N/A

WTB STB

- | | | | | | |
|---------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|
| 1. Trip Blank present / cooler: | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. Trip Blank listed on COC: | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | |
| 3. Samples preserved properly: | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | |
| 4. VOCs headspace free: | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | |

Sample Integrity - Documentation

Y or N

- | | | |
|--|-------------------------------------|--------------------------|
| 1. Sample labels present on bottles: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Container labeling complete: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 3. Sample container label / COC agree: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

Sample Integrity - Condition

Y or N

- | | | |
|----------------------------------|-------------------------------------|--------------------------|
| 1. Sample recvd within HT: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. All containers accounted for: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 3. Condition of sample: | Intact | |

Sample Integrity - Instructions

Y or N N/A

- | | | | |
|---|-------------------------------------|-------------------------------------|-------------------------------------|
| 1. Analysis requested is clear: | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| 2. Bottles received for unspecified tests | <input type="checkbox"/> | <input checked="" type="checkbox"/> | |
| 3. Sufficient volume recvd for analysis: | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| 4. Compositing instructions clear: | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 5. Filtering instructions clear: | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

Comments:

TC15481: Chain of Custody
Page 2 of 3

Sample Receipt Log

Page 2 of 2

Job #: TC15728

Date / Time Received: 9/4/2012 2:52:00 PM

Initials: CH

Client: DOW CHEMICAL

Cooler #	Sample ID:	Vol	Bot #	Location	Pres	pH	Therm ID	Initial Temp	Therm CF	Corrected Temp
1	TC15728-1	32oz	1	2-84	N/P	Note #2 - Preservative check not applicable.	IRGUN5	1.1	-0.4	0.7
1	TC15728-2	32oz	1	2-84	N/P	Note #2 - Preservative check not applicable.	IRGUN5	1.1	-0.4	0.7

5.1

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TC15481: Chain of Custody
Page 3 of 3

Appendix A Laboratory Data Package Cover Page

TC15481 This data package consists of

- ☐ This signature page, the laboratory review checklist, and the following reportable data:
- ☐ R1 Field chain-of-custody documentation;
- ☐ R2 Sample identification cross-reference;
- ☐ R3 Test reports (analytical data sheets) for each environmental sample that includes:
 - a) Items consistent with NELAC 5.13 or ISO/IEC 17025 Section 5.10
 - b) dilution factors,
 - c) preparation methods,
 - d) cleanup methods, and
 - e) if required for the project, tentatively identified compounds (TICs).
- ☐ R4 Surrogate recovery data including:
 - a) Calculated recovery (%R), and
 - b) The laboratory's surrogate QC limits.
- ☐ R5 Test reports/summary forms for blank samples;
- ☐ R6 Test reports/summary forms for laboratory control samples (LCSs) including:
 - a) LCS spiking amounts,
 - b) Calculated %R for each analyte, and
 - c) The laboratory's LCS QC limits.
- ☐ R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
 - a) Samples associated with the MS/MSD clearly identified,
 - b) MS/MSD spiking amounts,
 - c) Concentration of each MS/MSD analyte measured in the parent and
 - d) Calculated %Rs and relative percent differences (RPDs), and
 - e) The laboratory's MS/MSD QC limits
- ☐ R8 Laboratory analytical duplicate (if applicable) recovery and precision:
 - a) The amount of analyte measured in the duplicate,
 - b) The calculated RPD, and
 - c) The laboratory's QC limits for analytical duplicates.
- ☐ R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each
- ☐ R10 Other problems or anomalies.

The Exception Report for each "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Report. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratory in the Laboratory Review Checklist, and no information or data have been knowingly withheld.

Check, if applicable: This laboratory meets an exception under 30 TAC&25.6 and was last inspection by

☐ [X] TCEQ or ☐ _____ on April 2011. Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

QA Manager

Name (Printed)

Signature

Official Title (printed)

Date

Richard Rodriguez



Laboratory Director

9/6/2012

LABORATORY REVIEW CHECKLIST: REPORTABLE DATA									
Laboratory Name:		Accutest Gulf Coast		LRC Date:		9/6/2012			
Project Name:		Quarterly Well Sampling, Parker County, Texas		Laboratory Project Number:		TC15481			
Reviewer Name:		Anita Patel		Prep Batch Number(s):		GSS181, VC1174			
# ¹	A ²	DESCRIPTION				YES	NO	NA ³	NR ⁴ ER # ⁵
R1	OI	CHAIN-OF-CUSTODY (C-O-C):							
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?				X			
		Were all departures from standard conditions described in an exception report?				X			
R2	OI	Sample and quality control (QC) identification							
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?				X			
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?				X			
R3	OI	Test reports							
		Were samples prepared and analyzed within holding times?				X			
		Other than those results <MQL, were all other raw values bracketed by calibration standards?				X			
		Were calculations checked by a peer or supervisor?				X			
		Were all analyte identifications checked by a peer or supervisor?				X			
		Were sample detection limits reported for all analytes not detected?				X			
		Were all results for soil and sediment samples reported on a dry weight basis?						X	
		Were % moisture (or solids) reported for all soil and sediment samples?						X	
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW846 Method 5035?						X	
		If required for the project, are TIC's reported?						X	
R4	O	Surrogate recovery data							
		Were surrogates added prior to extraction?				X			
		Were surrogate percent recoveries in all samples within the laboratory QC limits?				X			
R5	OI	Test reports/summary forms for blank samples							
		Were appropriate type(s) of blanks analyzed?				X			
		Were blanks analyzed at the appropriate frequency?				X			
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?				X			
		Were blank concentrations <MQL?				X			
R6	OI	Laboratory control samples (LCS):							
		Were all COCs included in the LCS?				X			
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?				X			
		Were LCSs analyzed at required frequency?				X			
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?				X			
		Does the detectability check sample data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?				X			2
		Was the LCSD RPD within QC limits?						X	
R7	OI	Matrix spike (MS) and matrix spike duplicate (MSD) data							
		Were the project/method specified analytes included in the MS and MSD?				X			
		Were MS/MSD analyzed at the appropriate frequency?				X			
		Were MS (and MSD, if applicable) %Rs within the laboratory QC Limits?				X			
		Were the MS/MSD RPDs within laboratory QC limits?				X			
R8	OI	Analytical duplicate data							
		Were appropriate analytical duplicates analyzed for each matrix?				X			
		Were analytical duplicates analyzed at the appropriate frequency?				X			
		Were RPDs or relative standard deviations within the laboratory QC limits?				X			
R9	OI	Method quantitation limits (MQLs):							
		Are the MQLs for each method analyte included in the laboratory data package?				X			
		Do the MQLs correspond to the concentration of the lowest non-zero calibration				X			
		Are unadjusted MQLs and DCSs included in the laboratory data package?					X		3
R10	OI	Other problems/anomalies							
		Are all known problems/anomalies/special conditions noted in this LRC and ER?				X			
		Was applicable and available technology used to lower the SDL to minimize the				X			
		Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices, and methods associated with this laboratory data package?				X			4

Laboratory Name:		Accutest Gulf Coast	LRC Date:		9/6/2012	
Project Name:		Quarterly Well Sampling, Parker	Laboratory Project Number:		TC15481	
Reviewer Name:		Anita Patel	Prep Batch Number(s):		GSS181, VC1174	
# ¹	A ²	DESCRIPTION	YES	NO	NA ³	NR ⁴ ER # ⁵
S1	OI	Initial calibration (ICAL)				
		Were response factors and/or relative response factors for each analyte within QC limits?	X			
		Were percent RSDs or correlation coefficient criteria met?	X			
		Was the number of standards recommended in the method used for all analytes?	X			
		Were all points generated between the lowest and highest standard used to calculate the curve?	X			
		Are ICAL data available for all instruments used?	X			
		Has the initial calibration curve been verified using an appropriate second source standard?	X			
S2	OI	Initial and continuing calibration verification (ICCV AND CCV) and continuing				
		Was the CCV analyzed at the method-required frequency?	X			
		Were percent differences for each analyte within the method-required QC limits?	X			
		Was the ICAL curve verified for each analyte?	X			
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?			X	
S3	O	Mass spectral tuning				
		Was the appropriate compound for the method used for tuning?	X			
		Were ion abundance data within the method-required QC limits?	X			
S4	O	Internal standards (IS)				
		Were IS area counts and retention times within the method-required QC limits?	X			
S5	OI	Raw data (NELAC Section 5.5.10)				
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X			
		Were data associated with manual integrations flagged on the raw data?	X			
S6	O	Dual column confirmation				
		Did dual column confirmation results meet the method-required QC?			X	
S7	O	Tentatively identified compounds (TICs):				
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X	
S8	I	Interference Check Sample (ICS) results				
		Were percent recoveries within method QC limits?			X	
S9	I	Serial dilutions, post digestion spikes, and method of standard additions				
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			X	
S10	OI	Method detection limit (MDL) studies				
		Was a MDL study performed for each reported analyte?	X			
		Is the MDL either adjusted or supported by the analysis of DCSs?	X			2
S11	OI	Proficiency test reports				
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X			
S12	OI	Standards documentation				
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate source?	X			
S13	OI	Compound/analyte identification procedures				
		Are the procedures for compound/analyte identification documented?	X			
S14	OI	Demonstration of analyst competency (DOC)				
		Was DOC conducted consistent with NELAC Chapter 5?	X			
		Is documentation of the analyst's competency up-to-date and on file?	X			
S15	OI	Verification/validation documentation for methods (NELAC Chapter 5)				
		Are all the methods used to generate the data documented, verified, and validated, where applicable?	X			
S16	OI	Laboratory standard operating procedures (SOPs)				
		Are laboratory SOPs current and on file for each method performed?	X			

ת

1ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked on

GC/MS Volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries



Method Blank Summary

Page 1 of 1

Job Number: TC15481

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VC1174-MB	C00254984.D1		08/31/12	CF	n/a	n/a	VC1174

The QC reported here applies to the following samples:

Method: SW846 8260B

TC15481-1

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.34	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.32	ug/l	
108-88-3	Toluene	ND	1.0	0.33	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.87	ug/l	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	100%	72-122%
17060-07-0	1,2-Dichloroethane-D4	110%	68-124%
2037-26-5	Toluene-D8	101%	80-119%
460-00-4	4-Bromofluorobenzene	104%	72-126%

6.1.1

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Blank Spike Summary

Page 1 of 1

Job Number: TC15481

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VC1174-BS	C00254982.D1		08/31/12	CF	n/a	n/a	VC1174

The QC reported here applies to the following samples:

Method: SW846 8260B

TC15481-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2	Benzene	25	24.0	96	76-118
100-41-4	Ethylbenzene	25	24.3	97	75-112
108-88-3	Toluene	25	21.6	86	77-114
1330-20-7	Xylene (total)	75	72.5	97	75-111

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	102%	79-122%
17060-07-0	1,2-Dichloroethane-D4	103%	75-121%
2037-26-5	Toluene-D8	95%	87-119%
460-00-4	4-Bromofluorobenzene	101%	80-133%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: TC15481

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC15249-4MS	C00254986.D1		08/31/12	CF	n/a	n/a	VC1174
TC15249-4MSD	C00254987.D1		08/31/12	CF	n/a	n/a	VC1174
TC15249-4	C00254985.D1		08/31/12	CF	n/a	n/a	VC1174

The QC reported here applies to the following samples:

Method: SW846 8260B

TC15481-1

CAS No.	Compound	TC15249-4 ug/l	Q	Spike ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	ND		25	22.3	89	22.4	90	0	68-119/12
100-41-4	Ethylbenzene	0.44	J	25	23.5	92	23.5	92	0	71-117/12
108-88-3	Toluene	0.37	J	25	23.8	94	21.9	86	8	73-119/13
1330-20-7	Xylene (total)	4.5		75	75.5	95	76.6	96	1	74-119/13

CAS No.	Surrogate Recoveries	MS	MSD	TC15249-4	Limits
1868-53-7	Dibromofluoromethane	105%	101%	100%	72-122%
17060-07-0	1,2-Dichloroethane-D4	100%	99%	107%	68-124%
2037-26-5	Toluene-D8	103%	97%	106%	80-119%
460-00-4	4-Bromofluorobenzene	90%	103%	100%	72-126%

* = Outside of Control Limits.

GC Volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Page 1 of 1

Job Number: TC15481

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GSS181-MB	SS003712.D	1	09/04/12	LT	n/a	n/a	GSS181

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC15481-1

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	ND	0.50	0.30	ug/l	
74-85-1	Ethene	ND	1.0	0.50	ug/l	
74-84-0	Ethane	ND	1.0	0.50	ug/l	
74-98-6	Propane	ND	1.5	0.75	ug/l	
75-28-5	Isobutane	ND	1.5	0.75	ug/l	
106-97-8	Butane	ND	1.5	0.75	ug/l	

7.1.1

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Blank Spike Summary

Page 1 of 1

Job Number: TC15481

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GSS181-BS	SS003710.D	1	09/04/12	LT	n/a	n/a	GSS181

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC15481-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
74-82-8	Methane	21.5	21.7	101	68-139
74-85-1	Ethene	57.4	44.7	78	52-145
74-84-0	Ethane	43.3	31.5	73	68-131
74-98-6	Propane	60.6	47.2	78	69-131
75-28-5	Isobutane	72.5	60.0	83	72-131
106-97-8	Butane	76.6	63.6	83	66-128

* = Outside of Control Limits.

Matrix Spike Summary

Page 1 of 1

Job Number: TC15481

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC15494-1MS	SS003719.D	1	09/04/12	LT	n/a	n/a	GSS181
TC15494-1	SS003718.D	1	09/04/12	LT	n/a	n/a	GSS181

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC15481-1

CAS No.	Compound	TC15494-1 ug/l	Q	Spike ug/l	MS ug/l	MS %	Limits
74-82-8	Methane	0.50 U		21.5	21.4	99	68-139
74-85-1	Ethene	1.0 U		57.4	60.9	106	52-145
74-84-0	Ethane	1.0 U		43.3	43.8	101	68-131
74-98-6	Propane	1.5 U		60.6	63.6	105	69-131
75-28-5	Isobutane	1.5 U		72.5	79.7	110	72-131
106-97-8	Butane	1.5 U		76.6	83.9	110	66-128

* = Outside of Control Limits.

Duplicate Summary

Page 1 of 1

Job Number: TC15481

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC15494-2DUP	SS003722.D	1	09/04/12	LT	n/a	n/a	GSS181
TC15494-2	SS003721.D	1	09/04/12	LT	n/a	n/a	GSS181

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC15481-1

CAS No.	Compound	TC15494-2		DUP		RPD	Limits
		ug/l	Q	ug/l	Q		
74-82-8	Methane	0.50 U		ND		nc	53
74-85-1	Ethene	1.0 U		ND		nc	27
74-84-0	Ethane	1.0 U		ND		nc	43
74-98-6	Propane	1.5 U		ND		nc	21
75-28-5	Isobutane	1.5 U		ND		nc	35
106-97-8	Butane	1.5 U		ND		nc	33

* = Outside of Control Limits.



08/31/12

Technical Report for

EarthCon Consultants

Quarterly Well Sampling, Parker County, Texas

2nd Quarter / WW6-THO

Accutest Job Number: TC14972

Sampling Date: 08/17/12

Report to:

EarthCon Consultants
4800 Sugar Grove Suite 420
Stafford, TX 77477
gfloreslovo@earthcon.com; djackson@jacksonsjoberg.com;
mcpatton@rangeresources.com; escott@earthcon.com
ATTN: Gabriela Floreslovo

Total number of pages in report: **25**



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.


Richard Rodriguez
Laboratory Director

Client Service contact: Elessa Sommers 713-271-4700

Certifications: TX (T104704220-12-8) AR (11-028-0) AZ (AZ0769) FL (E87628) KS (E-10366)
LA (85695/04004) OK (211-035)

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Test results relate only to samples analyzed.

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Sample Summary

EarthCon Consultants

Job No: TC14972

Quarterly Well Sampling, Parker County, Texas
Project No: 2nd Quarter / WW6-THO

Sample Number	Collected Date	Time By	Received	Matrix Code Type	Client Sample ID
TC14972-1	08/17/12	15:20	08/21/12	AQ Ground Water	WW6-THO-081712



SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: EarthCon Consultants

Job No TC14972

Site: Quarterly Well Sampling, Parker County, Texas

Report Date 8/31/2012 6:59:49 PM

1 Sample was collected on 08/17/2012 and received intact at Accutest on 08/21/2012 and properly preserved in 1 cooler at 2.4 Deg C. The sample received an Accutest job number of TC14972. A listing of the Laboratory Sample ID, Client Sample ID and date of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

Volatiles by GCMS By Method SW846 8260B

Matrix AQ	Batch ID: VZ3732
------------------	-------------------------

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC14970-1MS, TC14970-1MSD were used as the QC samples indicated.

Volatiles by GC By Method RSKSOP-147/175

Matrix AQ	Batch ID: GSS178
------------------	-------------------------

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC14970-1DUP, TC14970-1MS were used as the QC samples indicated.
- Matrix Spike Recovery for Methane is outside control limits. Outside control limits due to high level in sample relative to spike amount.

Accutest Laboratories Gulf Coast (ALGC) certifies that this report meets the project requirements for analytical data produced for the samples as received at ALGC and as stated on the COC. ALGC certifies that the data meets the Data Quality Objectives for precision, accuracy and completeness as specified in the ALGC Quality Manual except as noted above. This report is to be used in its entirety. ALGC is not responsible for any assumptions of data quality if partial data packages are used

Summary of Hits

Page 1 of 1

Job Number: TC14972

Account: EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Collected: 08/17/12

3

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	MQL	SDL	Units	Method
TC14972-1	WW6-THO-081712					
Methane		0.771	0.0050	0.0030	mg/l	RSKSOP-147/175
Ethane		0.0261	0.0010	0.00050	mg/l	RSKSOP-147/175

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID: WW6-THO-081712

Lab Sample ID: TC14972-1

Date Sampled: 08/17/12

Matrix: AQ - Ground Water

Date Received: 08/21/12

Method: SW846 8260B

Percent Solids: n/a

Project: Quarterly Well Sampling, Parker County, Texas

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Z028328.D	1	08/24/12	AK	n/a	n/a	VZ3732
Run #2							

Purge Volume

Run #1 5.0 ml

Run #2

Purgeable Aromatics

CAS No.	Compound	Result	MQL	SDL	Units	Q
71-43-2	Benzene	0.00025 U	0.0010	0.00025	mg/l	
108-88-3	Toluene	0.00026 U	0.0010	0.00026	mg/l	
100-41-4	Ethylbenzene	0.00025 U	0.0010	0.00025	mg/l	
1330-20-7	Xylene (total)	0.00071 U	0.0030	0.00071	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	100%		79-122%
17060-07-0	1,2-Dichloroethane-D4	89%		75-121%
2037-26-5	Toluene-D8	104%		87-119%
460-00-4	4-Bromofluorobenzene	111%		80-133%

U = Not detected SDL - Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Page 1 of 1

Client Sample ID:	WW6-THO-081712	Date Sampled:	08/17/12
Lab Sample ID:	TC14972-1	Date Received:	08/21/12
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	RSKSOP-147/175		
Project:	Quarterly Well Sampling, Parker County, Texas		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	SS003643.D	1	08/27/12	LT	n/a	n/a	GSS178
Run #2	SS003650.D	10	08/27/12	LT	n/a	n/a	GSS178

RSK147 Special List

CAS No.	Compound	Result	MQL	SDL	Units	Q
74-82-8	Methane	0.771 ^a	0.0050	0.0030	mg/l	
74-85-1	Ethene	0.00050 U	0.0010	0.00050	mg/l	
74-84-0	Ethane	0.0261	0.0010	0.00050	mg/l	
74-98-6	Propane	0.00075 U	0.0015	0.00075	mg/l	
75-28-5	Isobutane	0.00075 U	0.0015	0.00075	mg/l	
106-97-8	Butane	0.00075 U	0.0015	0.00075	mg/l	

(a) Result is from Run# 2

U = Not detected SDL - Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Misc. Forms

5

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody
- LRC Form

10165 Harwin Dr, Ste 150 Houston, TX 77036
TEL: 713-271-4700 FAX: 713-271-4770
www.aacutest.com

Client / Reporting Information				Project Information												Requested Analyses												Matrix Codes																																			
Company Name EarthCon Consultants, Inc.				Project Name: Second Quarterly Well Sampling, Parker County, Texas												<div style="display: flex; align-items: center;"> <div style="writing-mode: vertical-rl; transform: rotate(180deg); border: 1px solid black; padding: 2px;"> BUTANE, ETHANE, ETHANE, ISOBUTANE, METHANE, PROPANE BY RSK-175 </div> <div style="margin-left: 10px;"> DW - Drinking Water GW - Ground Water SW - Surface Water SO - Soil SL - Sludge SED - Sediment CI - Oil LIQ - Other Liquid AIR - Air SOL - Other Solid WP - Wipe FB - Field Blank </div> </div>																																															
Street Address 4800 Sugar Grove Blvd., Suite 390				Billing Information (If different from Report to)																																																											
City State Zip Stafford TX 77477				Company Name																																																											
Project Contact E-mail Gabriela Floreslovo				Street Address																																																											
Phone # Fax # 281-201-3513				Client Purchase Order #												City State Zip																																															
Sampler(s) Name(s) Phone # J. Bruszkowski 404 803-0145				Project Manager												Attention:																																															
Accutest Sample #				Collection												BYTEX 8280B Butane, Ethane, Ethane, Isobutane, Methane, Propane by RSK-175																																															
				Field ID / Point of Collection																								Number of preserved bottles																																			
				<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th>Date</th> <th>Time</th> <th>Sampled By</th> <th>Matrix</th> <th># of bottles</th> <th>H2</th> <th>H2O</th> <th>ZnAcOH</th> <th>HNO3</th> <th>H2SO4</th> <th>HNO3</th> <th>HNO3</th> <th>Di Water</th> <th>ASOH</th> <th>TSP</th> <th>H2SO4</th> <th>ENDORF</th> <th>OTHER</th> </tr> </thead> <tbody> <tr> <td>8-17-12</td> <td>1520</td> <td>JAB/M</td> <td>W</td> <td>6</td> <td>X</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>												Date	Time	Sampled By	Matrix	# of bottles	H2	H2O	ZnAcOH	HNO3	H2SO4	HNO3	HNO3	Di Water	ASOH	TSP	H2SO4	ENDORF	OTHER	8-17-12	1520	JAB/M	W	6	X																								
Date	Time	Sampled By	Matrix	# of bottles	H2	H2O	ZnAcOH	HNO3	H2SO4	HNO3	HNO3	Di Water	ASOH	TSP	H2SO4	ENDORF	OTHER																																														
8-17-12	1520	JAB/M	W	6	X																																																										
Turnaround Time (Business days)				Data Deliverable Information												Comments / Special Instructions																																															
				<input checked="" type="checkbox"/> Standard <input type="checkbox"/> 5 Day RUSH <input type="checkbox"/> 4 Day RUSH <input type="checkbox"/> 3 Day RUSH <input type="checkbox"/> 2 Day RUSH <input type="checkbox"/> 1 Day EMERGENCY Emergency & Rush TIA data available via Lablink																								<input type="checkbox"/> Commercial "A" (Level 1) <input type="checkbox"/> Commercial "B" (Level 2) <input type="checkbox"/> FULTY (Level 3+4) <input type="checkbox"/> REDT1 (Level 3+4) <input type="checkbox"/> Commercial "C" <input checked="" type="checkbox"/> TRRP <input type="checkbox"/> EDD Format <input type="checkbox"/> Other _____																																			
Approved By (Accutest PM): / Date: _____ _____ _____ _____				Commercial "A" = Results Only Commercial "B" = Results + QC Summary Commercial "C" = Results + QC & Surrogate Summary																																																											
Sample Custody must be documented below each time samples change possession, including courier delivery.				Relinquished By: 2 Relinquished By: 4 Custody Seal # 5												Date Time: 8/19/12 10:15 Date Time: 8/19/12 10:15 Date Time: 8/19/12 10:15																																															
				Relinquished By: 2 Relinquished By: 4 Relinquished By: 5												Received By: 2 Received By: 4 Received By: 5																																															

TC14972: Chain of Custody
Page 1 of 3

Accutest Laboratories Sample Receipt Summary

Page 1 of 2

Accutest Job Number: TC14972 Client: EARTHCON CONSULTANTS Project: 2ND QUARTERLY
 Date / Time Received: 8/21/2012 Delivery Method: FedEx Airbill #'s: 795765167616
 No. Coolers: 1 Therm ID: IRGUN5 Temp Adjustment Factor: -0.4
 Cooler Temps (Initial/Adjusted): #1: (2.8/2.4)

Cooler Security
Y or N

- | | |
|--|---|
| 1. Custody Seals Present: <input checked="" type="checkbox"/> Y <input type="checkbox"/> N | 3. COC Present: <input checked="" type="checkbox"/> Y <input type="checkbox"/> N |
| 2. Custody Seals Intact: <input checked="" type="checkbox"/> Y <input type="checkbox"/> N | 4. Smpl Dates/Time OK: <input checked="" type="checkbox"/> Y <input type="checkbox"/> N |

Cooler Temperature
Y or N

- | | |
|---|-----------|
| 1. Temp criteria achieved: <input checked="" type="checkbox"/> Y <input type="checkbox"/> N | |
| 2. Cooler temp verification: _____ | |
| 3. Cooler media: _____ | Ice (Bag) |

Quality Control Preservation
Y or N
N/A
WTB STB

- | | |
|---|--|
| 1. Trip Blank present / cooler: <input checked="" type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A | WTB <input checked="" type="checkbox"/> STB <input type="checkbox"/> |
| 2. Trip Blank listed on COC: <input type="checkbox"/> Y <input checked="" type="checkbox"/> N <input type="checkbox"/> N/A | |
| 3. Samples preserved properly: <input checked="" type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A | |
| 4. VOCs headspace free: <input checked="" type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A | |

Sample Integrity - Documentation
Y or N

- | | |
|---|--|
| 1. Sample labels present on bottles: <input checked="" type="checkbox"/> Y <input type="checkbox"/> N | 2. Container labeling complete: <input checked="" type="checkbox"/> Y <input type="checkbox"/> N |
| 3. Sample container label / COC agree: <input checked="" type="checkbox"/> Y <input type="checkbox"/> N | |

Sample Integrity - Condition
Y or N

- | | |
|---|---|
| 1. Sample recvd within HT: <input checked="" type="checkbox"/> Y <input type="checkbox"/> N | 2. All containers accounted for: <input checked="" type="checkbox"/> Y <input type="checkbox"/> N |
| 3. Condition of sample: _____ | Intact |

Sample Integrity - Instructions
Y or N N/A

- | | |
|---|--|
| 1. Analysis requested is clear: <input checked="" type="checkbox"/> Y <input type="checkbox"/> N | 2. Bottles received for unspecified tests: <input type="checkbox"/> Y <input checked="" type="checkbox"/> N |
| 3. Sufficient volume recvd for analysis: <input checked="" type="checkbox"/> Y <input type="checkbox"/> N | 4. Compositing instructions clear: <input type="checkbox"/> Y <input type="checkbox"/> N <input checked="" type="checkbox"/> N/A |
| 5. Filtering instructions clear: <input type="checkbox"/> Y <input type="checkbox"/> N | <input checked="" type="checkbox"/> N/A |

Comments

TC14972: Chain of Custody
Page 2 of 3

 5.1
5

Sample Receipt Log

Page 2 of 2

Job #: TC13879

Date / Time Received: 8/2/2012 9:50:00 AM

Initials: BG

Client: SPECTRA ENERGY

Cooler #	Sample ID:	Vol	Bot #	Location	Pres	pH	Therm ID	Initial Temp	Therm CF	Corrected Temp
1	TC13879-1	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-1	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-2	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-2	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-3	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-3	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-4	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-4	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-5	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-5	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-6	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-6	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1

TC14972: Chain of Custody
Page 3 of 3

Appendix A Laboratory Data Package Cover Page

TC14972 This data package consists of

- ☐ This signature page, the laboratory review checklist, and the following reportable data:
- ☐ R1 Field chain-of-custody documentation;
- ☐ R2 Sample identification cross-reference;
- ☐ R3 Test reports (analytical data sheets) for each environmental sample that includes:
 - a) Items consistent with NELAC 5.13 or ISO/IEC 17025 Section 5.10
 - b) dilution factors,
 - c) preparation methods,
 - d) cleanup methods, and
 - e) if required for the project, tentatively identified compounds (TICs).
- ☐ R4 Surrogate recovery data including:
 - a) Calculated recovery (%R), and
 - b) The laboratory's surrogate QC limits.
- ☐ R5 Test reports/summary forms for blank samples;
- ☐ R6 Test reports/summary forms for laboratory control samples (LCSs) including:
 - a) LCS spiking amounts,
 - b) Calculated %R for each analyte, and
 - c) The laboratory's LCS QC limits.
- ☐ R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
 - a) Samples associated with the MS/MSD clearly identified,
 - b) MS/MSD spiking amounts,
 - c) Concentration of each MS/MSD analyte measured in the parent and
 - d) Calculated %Rs and relative percent differences (RPDs), and
 - e) The laboratory's MS/MSD QC limits
- ☐ R8 Laboratory analytical duplicate (if applicable) recovery and precision:
 - a) The amount of analyte measured in the duplicate,
 - b) The calculated RPD, and
 - c) The laboratory's QC limits for analytical duplicates.
- ☐ R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each
- ☐ R10 Other problems or anomalies.

The Exception Report for each "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Report. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratory in the Laboratory Review Checklist, and no information or data have been knowingly withheld.

Check, if applicable: This laboratory meets an exception under 30 TAC&25.6 and was last inspection by

☐ [X] TCEQ or ☐ _____ on April 2011. Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

QA Manager

Name (Printed)

Signature

Official Title (printed)

Date

Richard Rodriguez



Laboratory Director

8/29/2012

LABORATORY REVIEW CHECKLIST: REPORTABLE DATA									
Laboratory Name:		Accutest Gulf Coast Quarterly Well Sampling, Parker County, Texas		LRC Date:		8/29/2012			
Project Name:				Laboratory Project Number:		TC14972			
Reviewer Name:		Anita Patel		Prep Batch Number(s):		GSS178, VZ3732			
# ¹	A ²	DESCRIPTION				YES	NO	NA ³	NR ⁴ ER # ⁵
R1	OI	CHAIN-OF-CUSTODY (C-O-C):							
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?				X			
		Were all departures from standard conditions described in an exception report?				X			
R2	OI	Sample and quality control (QC) identification							
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?				X			
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?				X			
R3	OI	Test reports							
		Were samples prepared and analyzed within holding times?				X			
		Other than those results <MQL, were all other raw values bracketed by calibration standards?				X			
		Were calculations checked by a peer or supervisor?				X			
		Were all analyte identifications checked by a peer or supervisor?				X			
		Were sample detection limits reported for all analytes not detected?				X			
		Were all results for soil and sediment samples reported on a dry weight basis?					X		
		Were % moisture (or solids) reported for all soil and sediment samples?					X		
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW846 Method 5035?					X		
		If required for the project, are TIC's reported?					X		
R4	O	Surrogate recovery data							
		Were surrogates added prior to extraction?				X			
		Were surrogate percent recoveries in all samples within the laboratory QC limits?				X			
R5	OI	Test reports/summary forms for blank samples							
		Were appropriate type(s) of blanks analyzed?				X			
		Were blanks analyzed at the appropriate frequency?				X			
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?				X			
		Were blank concentrations <MQL?				X			
R6	OI	Laboratory control samples (LCS):							
		Were all COCs included in the LCS?				X			
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?				X			
		Were LCSs analyzed at required frequency?				X			
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?				X			
		Does the detectability check sample data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?				X			5
		Was the LCSD RPD within QC limits?					X		
R7	OI	Matrix spike (MS) and matrix spike duplicate (MSD) data							
		Were the project/method specified analytes included in the MS and MSD?				X			
		Were MS/MSD analyzed at the appropriate frequency?				X			
		Were MS (and MSD, if applicable) %Rs within the laboratory QC Limits?					X		4
		Were the MS/MSD RPDs within laboratory QC limits?				X			
R8	OI	Analytical duplicate data							
		Were appropriate analytical duplicates analyzed for each matrix?				X			
		Were analytical duplicates analyzed at the appropriate frequency?				X			
		Were RPDs or relative standard deviations within the laboratory QC limits?				X			
R9	OI	Method quantitation limits (MQLs):							
		Are the MQLs for each method analyte included in the laboratory data package?				X			
		Do the MQLs correspond to the concentration of the lowest non-zero calibration?				X			
		Are unadjusted MQLs and DCSs included in the laboratory data package?					X		2
R10	OI	Other problems/anomalies							
		Are all known problems/anomalies/special conditions noted in this LRC and ER?				X			
		Was applicable and available technology used to lower the SDL to minimize the				X			
		Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices, and methods associated with this laboratory data package?				X			3

Laboratory Name:		Accutest Gulf Coast	LRC Date:		8/29/2012	
Project Name:		Quarterly Well Sampling, Parker	Laboratory Project Number:		TC14972	
Reviewer Name:		Anita Patel	Prep Batch Number(s):		GSS178, VZ3732	
# ¹	A ²	DESCRIPTION	YES	NO	NA ³	NR ⁴ ER # ⁵
S1	OI	Initial calibration (ICAL)				
		Were response factors and/or relative response factors for each analyte within QC limits?	X			
		Were percent RSDs or correlation coefficient criteria met?	X			
		Was the number of standards recommended in the method used for all analytes?	X			
		Were all points generated between the lowest and highest standard used to calculate the curve?	X			
		Are ICAL data available for all instruments used?	X			
		Has the initial calibration curve been verified using an appropriate second source standard?	X			
S2	OI	Initial and continuing calibration verification (ICCV AND CCV) and continuing				
		Was the CCV analyzed at the method-required frequency?	X			
		Were percent differences for each analyte within the method-required QC limits?	X			
		Was the ICAL curve verified for each analyte?	X			
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?			X	
S3	O	Mass spectral tuning				
		Was the appropriate compound for the method used for tuning?	X			
		Were ion abundance data within the method-required QC limits?	X			
S4	O	Internal standards (IS)				
		Were IS area counts and retention times within the method-required QC limits?	X			
S5	OI	Raw data (NELAC Section 5.5.10)				
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X			
		Were data associated with manual integrations flagged on the raw data?	X			
S6	O	Dual column confirmation				
		Did dual column confirmation results meet the method-required QC?			X	
S7	O	Tentatively identified compounds (TICs):				
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X	
S8	I	Interference Check Sample (ICS) results				
		Were percent recoveries within method QC limits?			X	
S9	I	Serial dilutions, post digestion spikes, and method of standard additions				
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			X	
S10	OI	Method detection limit (MDL) studies				
		Was a MDL study performed for each reported analyte?	X			
		Is the MDL either adjusted or supported by the analysis of DCSs?	X			5
S11	OI	Proficiency test reports				
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X			
S12	OI	Standards documentation				
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate source?	X			
S13	OI	Compound/analyte identification procedures				
		Are the procedures for compound/analyte identification documented?	X			
S14	OI	Demonstration of analyst competency (DOC)				
		Was DOC conducted consistent with NELAC Chapter 5?	X			
		Is documentation of the analyst's competency up-to-date and on file?	X			
S15	OI	Verification/validation documentation for methods (NELAC Chapter 5)				
		Are all the methods used to generate the data documented, verified, and validated, where applicable?	X			
S16	OI	Laboratory standard operating procedures (SOPs)				
		Are laboratory SOPs current and on file for each method performed?	X			

LABORATORY REVIEW CHECKLIST (continued): Exception Reports			
Laboratory Name:		Accutest Gulf Coast	LRC Date:
Project Name:		Quarterly Well Sampling, Parker	Laboratory Project Number:
Reviewer Name:	Anita Patel	Prep Batch Number(s):	GSS178, VZ3732
ER# ¹	Description		
1	For reporting purposes, the MQL is defined in the report as the RL. The unadjusted MQL/RL is reported in the method blank. The SDL is defined in the report as the MDL.		
2	For reporting purposes, the method blank represents the unadjusted MQL. The DCS is on file in the laboratory and is not included in the laboratory data package.		
3	The laboratory is NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices, and methods associated with this laboratory data package for analytes that are listed in the Texas Fields of Accreditation.		
4	All anomalies are discussed in the case narrative.		
5	The Laboratory does not perform DCS analysis for Method RSKSOP-147/175. The components reported are not listed or do not have values in the Texas TRRP PCL tables.		

¹ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked on

GC/MS Volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries



Method Blank Summary

Page 1 of 1

Job Number: TC14972

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VZ3732-MB	Z028313.D	1	08/24/12	AK	n/a	n/a	VZ3732

The QC reported here applies to the following samples:

Method: SW846 8260B

TC14972-1

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.25	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.25	ug/l	
108-88-3	Toluene	ND	1.0	0.26	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.71	ug/l	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	106%	79-122%
17060-07-0	1,2-Dichloroethane-D4	98%	75-121%
2037-26-5	Toluene-D8	106%	87-119%
460-00-4	4-Bromofluorobenzene	114%	80-133%

6.1.1

6

Blank Spike Summary

Page 1 of 1

Job Number: TC14972

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VZ3732-BS	Z028311.D	1	08/24/12	AK	n/a	n/a	VZ3732

The QC reported here applies to the following samples:

Method: SW846 8260B

TC14972-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2	Benzene	25	23.5	94	76-118
100-41-4	Ethylbenzene	25	23.6	94	75-112
108-88-3	Toluene	25	23.2	93	77-114
1330-20-7	Xylene (total)	75	70.6	94	75-111

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	99%	79-122%
17060-07-0	1,2-Dichloroethane-D4	90%	75-121%
2037-26-5	Toluene-D8	103%	87-119%
460-00-4	4-Bromofluorobenzene	109%	80-133%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: TC14972

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC14970-1MS	Z028320.D	1	08/24/12	AK	n/a	n/a	VZ3732
TC14970-1MSD	Z028321.D	1	08/24/12	AK	n/a	n/a	VZ3732
TC14970-1	Z028319.D	1	08/24/12	AK	n/a	n/a	VZ3732

The QC reported here applies to the following samples:

Method: SW846 8260B

TC14972-1

CAS No.	Compound	TC14970-1 ug/l	Q	Spike ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	1.0 U		25	24.5	98	24.2	97	1	76-118/16
100-41-4	Ethylbenzene	1.0 U		25	24.7	99	23.7	95	4	75-112/12
108-88-3	Toluene	1.0 U		25	24.4	98	24.1	96	1	77-114/12
1330-20-7	Xylene (total)	3.0 U		75	74.1	99	72.6	97	2	75-111/12

CAS No.	Surrogate Recoveries	MS	MSD	TC14970-1	Limits
1868-53-7	Dibromofluoromethane	107%	106%	104%	79-122%
17060-07-0	1,2-Dichloroethane-D4	94%	93%	96%	75-121%
2037-26-5	Toluene-D8	107%	107%	107%	87-119%
460-00-4	4-Bromofluorobenzene	113%	113%	113%	80-133%

* = Outside of Control Limits.

GC Volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Page 1 of 1

Job Number: TC14972

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GSS178-MB	SS003617.D	1	08/27/12	LT	n/a	n/a	GSS178

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC14972-1

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	ND	0.50	0.30	ug/l	
74-85-1	Ethene	ND	1.0	0.50	ug/l	
74-84-0	Ethane	ND	1.0	0.50	ug/l	
74-98-6	Propane	ND	1.5	0.75	ug/l	
75-28-5	Isobutane	ND	1.5	0.75	ug/l	
106-97-8	Butane	ND	1.5	0.75	ug/l	

Blank Spike Summary

Page 1 of 1

Job Number: TC14972

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GSS178-BS	SS003615.D	1	08/27/12	LT	n/a	n/a	GSS178

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC14972-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
74-82-8	Methane	21.5	20.8	97	70-130
74-85-1	Ethene	57.4	58.2	101	70-130
74-84-0	Ethane	43.3	41.8	97	70-130
74-98-6	Propane	60.6	56.5	93	70-130
75-28-5	Isobutane	72.5	71.1	98	70-130
106-97-8	Butane	76.6	73.7	96	70-130

* = Outside of Control Limits.

Matrix Spike Summary

Page 1 of 1

Job Number: TC14972

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC14970-1MS	SS003620.D	1	08/27/12	LT	n/a	n/a	GSS178
TC14970-1	SS003618.D	1	08/27/12	LT	n/a	n/a	GSS178
TC14970-1	SS003621.D	10	08/27/12	LT	n/a	n/a	GSS178

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC14972-1

CAS No.	Compound	TC14970-1 ug/l	Spike Q	MS ug/l	MS %	Limits
74-82-8	Methane	914 ^b	21.5	600	-337* ^a	60-140
74-85-1	Ethene	1.0 U	57.4	58.8	102	60-140
74-84-0	Ethane	42.3	43.3	71.7	68	60-140
74-98-6	Propane	1.5 U	60.6	56.4	93	60-140
75-28-5	Isobutane	1.5 U	72.5	70.6	97	60-140
106-97-8	Butane	1.5 U	76.6	74.0	97	60-140

(a) Outside control limits due to high level in sample relative to spike amount.

(b) Result is from Run #2.

* = Outside of Control Limits.

Duplicate Summary

Page 1 of 1

Job Number: TC14972

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC14970-1DUP	SS003619.D	1	08/27/12	LT	n/a	n/a	GSS178
TC14970-1	SS003618.D	1	08/27/12	LT	n/a	n/a	GSS178
TC14970-1	SS003621.D	10	08/27/12	LT	n/a	n/a	GSS178

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC14972-1

CAS No.	Compound	TC14970-1 ug/l	DUP Q ug/l	Q	RPD	Limits
74-82-8	Methane	914 ^a	869	E	26	30
74-85-1	Ethene	1.0 U	ND		nc	30
74-84-0	Ethane	42.3	57.4		30	30
74-98-6	Propane	1.5 U	ND		nc	30
75-28-5	Isobutane	1.5 U	ND		nc	30
106-97-8	Butane	1.5 U	ND		nc	30

(a) Result is from Run #2.

* = Outside of Control Limits.

Lab #: 261140 Job #: 19036
 Sample Name/Number: WW6-THO-081712
 Company: Oil Tracers, LLC
 Date Sampled: 8/17/2012
 Container: Dissolved Gas Bottle
 Field/Site Name: Second Quarter Well Sampling
 Location: Parker County, TX
 Formation/Depth:
 Sampling Point:
 Date Received: 8/22/2012 Date Reported: 9/11/2012

Component	Chemical mol. %	$\delta^{13}\text{C}$ ‰	δD ‰	$\delta^{18}\text{O}$ ‰
Carbon Monoxide -----	nd			
Hydrogen Sulfide -----	na			
Helium -----	na			
Hydrogen -----	nd			
Argon -----	1.38			
Oxygen -----	0.11			
Nitrogen -----	87.01			
Carbon Dioxide -----	0.32			
Methane -----	11.05	-42.07	-127.0	
Ethane -----	0.131	-16.1		
Ethylene -----	nd			
Propane -----	nd			
Propylene -----	nd			
Iso-butane -----	nd			
N-butane -----	0.0009			
Iso-pentane -----	nd			
N-pentane -----	nd			
Hexanes + -----	0.0005			

Total BTU/cu.ft. dry @ 60deg F & 14.73psia, calculated: 114

Specific gravity, calculated: 0.929

Remarks:

Analysis is of gas extracted from water by headspace equilibration. Analysis has been corrected for helium added to create headspace. Helium dilution factor = 0.78

*Addition of helium negates the ability to detect native helium and may negate the ability to detect hydrogen.

** Ethane isotopes obtained online via GC-C-IRMS Sample ID on bottle listed as WW16

nd = not detected. na = not analyzed. Isotopic composition of hydrogen is relative to VSMOW. Isotopic composition of carbon is relative to VPDB. Isotopic composition of oxygen is relative to VSMOW, except for carbon dioxide which is relative to VPDB. Calculations for BTU and specific gravity per ASTM D3588. Chemical compositions are normalized to 100%. Mol. % is approximately equal to vol. %.



Reissue #1
09/24/12

Technical Report for

EarthCon Consultants

Quarterly Well Sampling, Parker County, Texas

2nd Quarter / WW01-WEL

Accutest Job Number: TC14973

Sampling Date: 08/17/12

Report to:

gfloreslovo@earthcon.com
djackson@jacksonsjoberg.com; mcpatton@rangeresources.com; escott@earthcon.com

Total number of pages in report: **26**



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.


Richard Rodriguez
Laboratory Director

Client Service contact: Elessa Sommers 713-271-4700

Certifications: TX (T104704220-12-8) AR (11-028-0) AZ (AZ0769) FL (E87628) KS (E-10366)
LA (85695/04004) OK (211-035)

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Test results relate only to samples analyzed.



Gulf Coast. Inc.

10165 Harwin Drive
Houston, TX 77036
Tel: 713-271-4700

www.accutest.com

September 24, 2012

EarthCon Consultants, Inc.
4800 Sugar Grove Blvd.
Suite 390
Houston, TX 77477

ATTN: Gabriela Floreslovo

RE: Accutest job TC14973 Reissue

Dear Ms. Floreslovo:

This report TC14973 has been revised to correct sample identification from WWW01-WEL-081712 to WW01-WEL-081712.

We apologize for any inconvenience this may have caused. Please feel free to contact me if I can be of further assistance.

Sincerely,

Bernadette Fini

Bernadette Fini
Accutest Laboratories, GC

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Sample Summary

EarthCon Consultants

Job No: TC14973

Quarterly Well Sampling, Parker County, Texas
Project No: 2nd Quarter / WW01-WEL

Sample Number	Collected Date	Time By	Received	Matrix Code Type	Client Sample ID
TC14973-1	08/17/12	08:58	08/21/12	AQ Ground Water	WW01-WEL-081712



SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: EarthCon Consultants

Job No TC14973

Site: Quarterly Well Sampling, Parker County, Texas

Report Date 8/31/2012 7:01:03 PM

1 Sample was collected on 08/17/2012 and received intact at Accutest on 08/21/2012 and properly preserved in 1 cooler at 2.4 Deg C. The sample received an Accutest job number of TC14973. A listing of the Laboratory Sample ID, Client Sample ID and date of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

Volatiles by GCMS By Method SW846 8260B

Matrix AQ	Batch ID: VZ3732
------------------	-------------------------

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC14970-1MS, TC14970-1MSD were used as the QC samples indicated.

Volatiles by GC By Method RSKSOP-147/175

Matrix AQ	Batch ID: GSS178
------------------	-------------------------

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC14970-1DUP, TC14970-1MS were used as the QC samples indicated.
- Matrix Spike Recovery for Methane is outside control limits. Outside control limits due to high level in sample relative to spike amount.

Accutest Laboratories Gulf Coast (ALGC) certifies that this report meets the project requirements for analytical data produced for the samples as received at ALGC and as stated on the COC. ALGC certifies that the data meets the Data Quality Objectives for precision, accuracy and completeness as specified in the ALGC Quality Manual except as noted above. This report is to be used in its entirety. ALGC is not responsible for any assumptions of data quality if partial data packages are used

Summary of Hits

Page 1 of 1

Job Number: TC14973

Account: EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Collected: 08/17/12



Lab Sample ID Analyte	Client Sample ID	Result/ Qual	MQL	SDL	Units	Method
TC14973-1	WW01-WEL-081712					
Methane		0.550	0.0050	0.0030	mg/l	RSKSOP-147/175
Ethane		0.0416	0.0010	0.00050	mg/l	RSKSOP-147/175

Sample Results

Report of Analysis

Report of Analysis

Page 1 of 1

Client Sample ID: WW01-WEL-081712

Lab Sample ID: TC14973-1

Date Sampled: 08/17/12

Matrix: AQ - Ground Water

Date Received: 08/21/12

Method: SW846 8260B

Percent Solids: n/a

Project: Quarterly Well Sampling, Parker County, Texas

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Z028331.D	1	08/24/12	AK	n/a	n/a	VZ3732
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

Purgeable Aromatics

CAS No.	Compound	Result	MQL	SDL	Units	Q
71-43-2	Benzene	0.00025 U	0.0010	0.00025	mg/l	
108-88-3	Toluene	0.00026 U	0.0010	0.00026	mg/l	
100-41-4	Ethylbenzene	0.00025 U	0.0010	0.00025	mg/l	
1330-20-7	Xylene (total)	0.00071 U	0.0030	0.00071	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	105%		79-122%
17060-07-0	1,2-Dichloroethane-D4	93%		75-121%
2037-26-5	Toluene-D8	105%		87-119%
460-00-4	4-Bromofluorobenzene	115%		80-133%

U = Not detected SDL - Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WW01-WEL-081712	Date Sampled:	08/17/12
Lab Sample ID:	TC14973-1	Date Received:	08/21/12
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	RSKSOP-147/175		
Project:	Quarterly Well Sampling, Parker County, Texas		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	SS003647.D	1	08/27/12	LT	n/a	n/a	GSS178
Run #2	SS003648.D	10	08/27/12	LT	n/a	n/a	GSS178

RSK147 Special List

CAS No.	Compound	Result	MQL	SDL	Units	Q
74-82-8	Methane	0.550 ^a	0.0050	0.0030	mg/l	
74-85-1	Ethene	0.00050 U	0.0010	0.00050	mg/l	
74-84-0	Ethane	0.0416	0.0010	0.00050	mg/l	
74-98-6	Propane	0.00075 U	0.0015	0.00075	mg/l	
75-28-5	Isobutane	0.00075 U	0.0015	0.00075	mg/l	
106-97-8	Butane	0.00075 U	0.0015	0.00075	mg/l	

(a) Result is from Run# 2

U = Not detected SDL - Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Misc. Forms



Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody
- LRC Form



CHAIN OF CUSTODY

PAGE ___ OF ___

10165 Harwin Dr, Ste 150 Houston, TX 77036
TEL: 713-271-4700 FAX: 713-271-4770
www.accutest.com

PED-EX Tracking #		Bottle Order Control #	
Accutest Quote #		Accutest Job # TC14973	
Client / Reporting Information		Project Information	
Company Name EarthCon Consultants, Inc.		Project Name Second Quarterly Well Sampling, Parker County, Texas	
Street Address 4800 Sugar Grove Blvd., Suite 390		Street	
City Stafford TX 77477		City State	
Project Contact Gabriela Floreslovo		Billing Information (If different from Report to) Company Name	
Phone # 281-201-3513		Street Address	
Fax #		City State Zip	
Sampler(s) Name(s) JULIE HEILFRICH (512) 632-5380		Client Purchase Order #	
Phone #		Project Manager	
		Attention:	
Field ID / Point of Collection WW01-WEL-081712		Collection	
Date 08/17/12		Time 0858	
Sampled By JLH		Matrix W	
# of bottles 6		Number of preserved bottles	
		HCl HNO ₃ H ₂ SO ₄ H ₂ O ₂ H ₂ CO ₃ H ₂ PO ₄ H ₂ PO ₃ H ₂ PO ₂ H ₂ PO ₁ H ₂ PO ₀ H ₂ PO ₋₁ H ₂ PO ₋₂ H ₂ PO ₋₃ H ₂ PO ₋₄ H ₂ PO ₋₅ H ₂ PO ₋₆ H ₂ PO ₋₇ H ₂ PO ₋₈ H ₂ PO ₋₉ H ₂ PO ₋₁₀ H ₂ PO ₋₁₁ H ₂ PO ₋₁₂ H ₂ PO ₋₁₃ H ₂ PO ₋₁₄ H ₂ PO ₋₁₅ H ₂ PO ₋₁₆ H ₂ PO ₋₁₇ H ₂ PO ₋₁₈ H ₂ PO ₋₁₉ H ₂ PO ₋₂₀ H ₂ PO ₋₂₁ H ₂ PO ₋₂₂ H ₂ PO ₋₂₃ H ₂ PO ₋₂₄ H ₂ PO ₋₂₅ H ₂ PO ₋₂₆ H ₂ PO ₋₂₇ H ₂ PO ₋₂₈ H ₂ PO ₋₂₉ H ₂ PO ₋₃₀ H ₂ PO ₋₃₁ H ₂ PO ₋₃₂ H ₂ PO ₋₃₃ H ₂ PO ₋₃₄ H ₂ PO ₋₃₅ H ₂ PO ₋₃₆ H ₂ PO ₋₃₇ H ₂ PO ₋₃₈ H ₂ PO ₋₃₉ H ₂ PO ₋₄₀ H ₂ PO ₋₄₁ H ₂ PO ₋₄₂ H ₂ PO ₋₄₃ H ₂ PO ₋₄₄ H ₂ PO ₋₄₅ H ₂ PO ₋₄₆ H ₂ PO ₋₄₇ H ₂ PO ₋₄₈ H ₂ PO ₋₄₉ H ₂ PO ₋₅₀ H ₂ PO ₋₅₁ H ₂ PO ₋₅₂ H ₂ PO ₋₅₃ H ₂ PO ₋₅₄ H ₂ PO ₋₅₅ H ₂ PO ₋₅₆ H ₂ PO ₋₅₇ H ₂ PO ₋₅₈ H ₂ PO ₋₅₉ H ₂ PO ₋₆₀ H ₂ PO ₋₆₁ H ₂ PO ₋₆₂ H ₂ PO ₋₆₃ H ₂ PO ₋₆₄ H ₂ PO ₋₆₅ H ₂ PO ₋₆₆ H ₂ PO ₋₆₇ H ₂ PO ₋₆₈ H ₂ PO ₋₆₉ H ₂ PO ₋₇₀ H ₂ PO ₋₇₁ H ₂ PO ₋₇₂ H ₂ PO ₋₇₃ H ₂ PO ₋₇₄ H ₂ PO ₋₇₅ H ₂ PO ₋₇₆ H ₂ PO ₋₇₇ H ₂ PO ₋₇₈ H ₂ PO ₋₇₉ H ₂ PO ₋₈₀ H ₂ PO ₋₈₁ H ₂ PO ₋₈₂ H ₂ PO ₋₈₃ H ₂ PO ₋₈₄ H ₂ PO ₋₈₅ H ₂ PO ₋₈₆ H ₂ PO ₋₈₇ H ₂ PO ₋₈₈ H ₂ PO ₋₈₉ H ₂ PO ₋₉₀ H ₂ PO ₋₉₁ H ₂ PO ₋₉₂ H ₂ PO ₋₉₃ H ₂ PO ₋₉₄ H ₂ PO ₋₉₅ H ₂ PO ₋₉₆ H ₂ PO ₋₉₇ H ₂ PO ₋₉₈ H ₂ PO ₋₉₉ H ₂ PO ₋₁₀₀ H ₂ PO ₋₁₀₁ H ₂ PO ₋₁₀₂ H ₂ PO ₋₁₀₃ H ₂ PO ₋₁₀₄ H ₂ PO ₋₁₀₅ H ₂ PO ₋₁₀₆ H ₂ PO ₋₁₀₇ H ₂ PO ₋₁₀₈ H ₂ PO ₋₁₀₉ H ₂ PO ₋₁₁₀ H ₂ PO ₋₁₁₁ H ₂ PO ₋₁₁₂ H ₂ PO ₋₁₁₃ H ₂ PO ₋₁₁₄ H ₂ PO ₋₁₁₅ H ₂ PO ₋₁₁₆ H ₂ PO ₋₁₁₇ H ₂ PO ₋₁₁₈ H ₂ PO ₋₁₁₉ H ₂ PO ₋₁₂₀ H ₂ PO ₋₁₂₁ H ₂ PO ₋₁₂₂ H ₂ PO ₋₁₂₃ H ₂ PO ₋₁₂₄ H ₂ PO ₋₁₂₅ H ₂ PO ₋₁₂₆ H ₂ PO ₋₁₂₇ H ₂ PO ₋₁₂₈ H ₂ PO ₋₁₂₉ H ₂ PO ₋₁₃₀ H ₂ PO ₋₁₃₁ H ₂ PO ₋₁₃₂ H ₂ PO ₋₁₃₃ H ₂ PO ₋₁₃₄ H ₂ PO ₋₁₃₅ H ₂ PO ₋₁₃₆ H ₂ PO ₋₁₃₇ H ₂ PO ₋₁₃₈ H ₂ PO ₋₁₃₉ H ₂ PO ₋₁₄₀ H ₂ PO ₋₁₄₁ H ₂ PO ₋₁₄₂ H ₂ PO ₋₁₄₃ H ₂ PO ₋₁₄₄ H ₂ PO ₋₁₄₅ H ₂ PO ₋₁₄₆ H ₂ PO ₋₁₄₇ H ₂ PO ₋₁₄₈ H ₂ PO ₋₁₄₉ H ₂ PO ₋₁₅₀ H ₂ PO ₋₁₅₁ H ₂ PO ₋₁₅₂ H ₂ PO ₋₁₅₃ H ₂ PO ₋₁₅₄ H ₂ PO ₋₁₅₅ H ₂ PO ₋₁₅₆ H ₂ PO ₋₁₅₇ H ₂ PO ₋₁₅₈ H ₂ PO ₋₁₅₉ H ₂ PO ₋₁₆₀ H ₂ PO ₋₁₆₁ H ₂ PO ₋₁₆₂ H ₂ PO ₋₁₆₃ H ₂ PO ₋₁₆₄ H ₂ PO ₋₁₆₅ H ₂ PO ₋₁₆₆ H ₂ PO ₋₁₆₇ H ₂ PO ₋₁₆₈ H ₂ PO ₋₁₆₉ H ₂ PO ₋₁₇₀ H ₂ PO ₋₁₇₁ H ₂ PO ₋₁₇₂ H ₂ PO ₋₁₇₃ H ₂ PO ₋₁₇₄ H ₂ PO ₋₁₇₅ H ₂ PO ₋₁₇₆ H ₂ PO ₋₁₇₇ H ₂ PO ₋₁₇₈ H ₂ PO ₋₁₇₉ H ₂ PO ₋₁₈₀ H ₂ PO ₋₁₈₁ H ₂ PO ₋₁₈₂ H ₂ PO ₋₁₈₃ H ₂ PO ₋₁₈₄ H ₂ PO ₋₁₈₅ H ₂ PO ₋₁₈₆ H ₂ PO ₋₁₈₇ H ₂ PO ₋₁₈₈ H ₂ PO ₋₁₈₉ H ₂ PO ₋₁₉₀ H ₂ PO ₋₁₉₁ H ₂ PO ₋₁₉₂ H ₂ PO ₋₁₉₃ H ₂ PO ₋₁₉₄ H ₂ PO ₋₁₉₅ H ₂ PO ₋₁₉₆ H ₂ PO ₋₁₉₇ H ₂ PO ₋₁₉₈ H ₂ PO ₋₁₉₉ H ₂ PO ₋₂₀₀ H ₂ PO ₋₂₀₁ H ₂ PO ₋₂₀₂ H ₂ PO ₋₂₀₃ H ₂ PO ₋₂₀₄ H ₂ PO ₋₂₀₅ H ₂ PO ₋₂₀₆ H ₂ PO ₋₂₀₇ H ₂ PO ₋₂₀₈ H ₂ PO ₋₂₀₉ H ₂ PO ₋₂₁₀ H ₂ PO ₋₂₁₁ H ₂ PO ₋₂₁₂ H ₂ PO ₋₂₁₃ H ₂ PO ₋₂₁₄ H ₂ PO ₋₂₁₅ H ₂ PO ₋₂₁₆ H ₂ PO ₋₂₁₇ H ₂ PO ₋₂₁₈ H ₂ PO ₋₂₁₉ H ₂ PO ₋₂₂₀ H ₂ PO ₋₂₂₁ H ₂ PO ₋₂₂₂ H ₂ PO ₋₂₂₃ H ₂ PO ₋₂₂₄ H ₂ PO ₋₂₂₅ H ₂ PO ₋₂₂₆ H ₂ PO ₋₂₂₇ H ₂ PO ₋₂₂₈ H ₂ PO ₋₂₂₉ H ₂ PO ₋₂₃₀ H ₂ PO ₋₂₃₁ H ₂ PO ₋₂₃₂ H ₂ PO ₋₂₃₃ H ₂ PO ₋₂₃₄ H ₂ PO ₋₂₃₅ H ₂ PO ₋₂₃₆ H ₂ PO ₋₂₃₇ H ₂ PO ₋₂₃₈ H ₂ PO ₋₂₃₉ H ₂ PO ₋₂₄₀ H ₂ PO ₋₂₄₁ H ₂ PO ₋₂₄₂ H ₂ PO ₋₂₄₃ H ₂ PO ₋₂₄₄ H ₂ PO ₋₂₄₅ H ₂ PO ₋₂₄₆ H ₂ PO ₋₂₄₇ H ₂ PO ₋₂₄₈ H ₂ PO ₋₂₄₉ H ₂ PO ₋₂₅₀ H ₂ PO ₋₂₅₁ H ₂ PO ₋₂₅₂ 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Accutest Laboratories Sample Receipt Summary

Page 1 of 2

Accutest Job Number: TC14973 Client: EARTHCON CONSULTANTS Project: 2ND QUARTERLY
Date / Time Received: 8/21/2012 Delivery Method: FedEx Airbill #'s: 795765167616
No. Coolers: 1 Therm ID: IRGUN5; Temp Adjustment Factor: -0.4;
Cooler Temps (Initial/Adjusted): #1: (2.8/2.4);

Cooler Security

Y or N

- | | | | | | |
|---------------------------|-------------------------------------|--------------------------|-----------------------|-------------------------------------|--------------------------|
| 1. Custody Seals Present: | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 3. COC Present: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Custody Seals Intact: | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 4. Smpl Dates/Time OK | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

Cooler Temperature

Y or N

- | | | |
|------------------------------|-------------------------------------|--------------------------|
| 1. Temp criteria achieved: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Cooler temp verification: | | |
| 3. Cooler media: | Ice (Bag) | |

Quality Control Preservation

Y or N N/A

WTB STB

- | | | | | | |
|---------------------------------|-------------------------------------|-------------------------------------|--------------------------|-------------------------------------|--------------------------|
| 1. Trip Blank present / cooler: | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Trip Blank listed on COC: | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | |
| 3. Samples preserved properly: | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | |
| 4. VOCs headspace free: | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | |

Sample Integrity - Documentation

Y or N

- | | | |
|--|-------------------------------------|--------------------------|
| 1. Sample labels present on bottles: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Container labeling complete: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 3. Sample container label / COC agree: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

Sample Integrity - Condition

Y or N

- | | | |
|----------------------------------|-------------------------------------|--------------------------|
| 1. Sample recvd within HT: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. All containers accounted for: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 3. Condition of sample: | Intact | |

Sample Integrity - Instructions

Y or N N/A

- | | | | |
|---|-------------------------------------|-------------------------------------|-------------------------------------|
| 1. Analysis requested is clear: | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| 2. Bottles received for unspecified tests | <input type="checkbox"/> | <input checked="" type="checkbox"/> | |
| 3. Sufficient volume recvd for analysis: | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| 4. Compositing instructions clear: | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 5. Filtering instructions clear: | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

Comments

5.1
5

TC14973: Chain of Custody
Page 2 of 3

Sample Receipt Log

Page 2 of 2

Job #: TC13879

Date / Time Received: 8/2/2012 9:50:00 AM

Initials: BG

Client: SPECTRA ENERGY

Cooler #	Sample ID:	Vol	Bot #	Location	Pres	pH	Therm ID	Initial Temp	Therm CF	Corrected Temp
1	TC13879-1	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-1	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-2	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-2	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-3	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-3	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-4	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-4	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-5	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-5	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-6	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-6	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1

TC14973: Chain of Custody
Page 3 of 3

Appendix A Laboratory Data Package Cover Page

TC14973 This data package consists of

- ☐ This signature page, the laboratory review checklist, and the following reportable data:
- ☐ R1 Field chain-of-custody documentation;
- ☐ R2 Sample identification cross-reference;
- ☐ R3 Test reports (analytical data sheets) for each environmental sample that includes:
 - a) Items consistent with NELAC 5.13 or ISO/IEC 17025 Section 5.10
 - b) dilution factors,
 - c) preparation methods,
 - d) cleanup methods, and
 - e) if required for the project, tentatively identified compounds (TICs).
- ☐ R4 Surrogate recovery data including:
 - a) Calculated recovery (%R), and
 - b) The laboratory's surrogate QC limits.
- ☐ R5 Test reports/summary forms for blank samples;
- ☐ R6 Test reports/summary forms for laboratory control samples (LCSs) including:
 - a) LCS spiking amounts,
 - b) Calculated %R for each analyte, and
 - c) The laboratory's LCS QC limits.
- ☐ R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
 - a) Samples associated with the MS/MSD clearly identified,
 - b) MS/MSD spiking amounts,
 - c) Concentration of each MS/MSD analyte measured in the parent and
 - d) Calculated %Rs and relative percent differences (RPDs), and
 - e) The laboratory's MS/MSD QC limits
- ☐ R8 Laboratory analytical duplicate (if applicable) recovery and precision:
 - a) The amount of analyte measured in the duplicate,
 - b) The calculated RPD, and
 - c) The laboratory's QC limits for analytical duplicates.
- ☐ R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each
- ☐ R10 Other problems or anomalies.

The Exception Report for each "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Report. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratory in the Laboratory Review Checklist, and no information or data have been knowingly withheld.

Check, if applicable: This laboratory meets an exception under 30 TAC&25.6 and was last inspection by

☐ [X] TCEQ or ☐ _____ on April 2011. Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

QA Manager

Name (Printed)

Signature

Official Title (printed)

Date

Richard Rodriguez



Laboratory Director

8/29/2012

LABORATORY REVIEW CHECKLIST: REPORTABLE DATA									
Laboratory Name:		Accutest Gulf Coast		LRC Date:		8/29/2012			
Project Name:		Quarterly Well Sampling, Parker County, Texas		Laboratory Project Number:		TC14973			
Reviewer Name:		Anita Patel		Prep Batch Number(s):		GSS178, VZ3732			
# ¹	A ²	DESCRIPTION				YES	NO	NA ³	NR ⁴ ER # ⁵
R1	OI	CHAIN-OF-CUSTODY (C-O-C):							
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?				X			
		Were all departures from standard conditions described in an exception report?				X			
R2	OI	Sample and quality control (QC) identification							
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?				X			
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?				X			
R3	OI	Test reports							
		Were samples prepared and analyzed within holding times?				X			
		Other than those results <MQL, were all other raw values bracketed by calibration standards?				X			
		Were calculations checked by a peer or supervisor?				X			
		Were all analyte identifications checked by a peer or supervisor?				X			
		Were sample detection limits reported for all analytes not detected?				X			
		Were all results for soil and sediment samples reported on a dry weight basis?						X	
		Were % moisture (or solids) reported for all soil and sediment samples?						X	
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW846 Method 5035?						X	
		If required for the project, are TIC's reported?						X	
R4	O	Surrogate recovery data							
		Were surrogates added prior to extraction?				X			
		Were surrogate percent recoveries in all samples within the laboratory QC limits?				X			
R5	OI	Test reports/summary forms for blank samples							
		Were appropriate type(s) of blanks analyzed?				X			
		Were blanks analyzed at the appropriate frequency?				X			
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?				X			
		Were blank concentrations <MQL?				X			
R6	OI	Laboratory control samples (LCS):							
		Were all COCs included in the LCS?				X			
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?				X			
		Were LCSs analyzed at required frequency?				X			
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?				X			
		Does the detectability check sample data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?				X			5
		Was the LCSD RPD within QC limits?						X	
R7	OI	Matrix spike (MS) and matrix spike duplicate (MSD) data							
		Were the project/method specified analytes included in the MS and MSD?				X			
		Were MS/MSD analyzed at the appropriate frequency?				X			
		Were MS (and MSD, if applicable) %Rs within the laboratory QC Limits?						X	4
		Were the MS/MSD RPDs within laboratory QC limits?				X			
R8	OI	Analytical duplicate data							
		Were appropriate analytical duplicates analyzed for each matrix?				X			
		Were analytical duplicates analyzed at the appropriate frequency?				X			
		Were RPDs or relative standard deviations within the laboratory QC limits?				X			
R9	OI	Method quantitation limits (MQLs):							
		Are the MQLs for each method analyte included in the laboratory data package?				X			
		Do the MQLs correspond to the concentration of the lowest non-zero calibration				X			
		Are unadjusted MQLs and DCSs included in the laboratory data package?						X	2
R10	OI	Other problems/anomalies							
		Are all known problems/anomalies/special conditions noted in this LRC and ER?				X			
		Was applicable and available technology used to lower the SDL to minimize the				X			
		Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices, and methods associated with this laboratory data package?				X			3

Laboratory Name:		Accutest Gulf Coast	LRC Date:		8/29/2012	
Project Name:		Quarterly Well Sampling, Parker	Laboratory Project Number:		TC14973	
Reviewer Name:		Anita Patel	Prep Batch Number(s):		GSS178, VZ3732	
# ¹	A ²	DESCRIPTION	YES	NO	NA ³	NR ⁴ ER # ⁵
S1	OI	Initial calibration (ICAL)				
		Were response factors and/or relative response factors for each analyte within QC limits?	X			
		Were percent RSDs or correlation coefficient criteria met?	X			
		Was the number of standards recommended in the method used for all analytes?	X			
		Were all points generated between the lowest and highest standard used to calculate the curve?	X			
		Are ICAL data available for all instruments used?	X			
		Has the initial calibration curve been verified using an appropriate second source standard?	X			
S2	OI	Initial and continuing calibration verification (ICCV AND CCV) and continuing				
		Was the CCV analyzed at the method-required frequency?	X			
		Were percent differences for each analyte within the method-required QC limits?	X			
		Was the ICAL curve verified for each analyte?	X			
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?			X	
S3	O	Mass spectral tuning				
		Was the appropriate compound for the method used for tuning?	X			
		Were ion abundance data within the method-required QC limits?	X			
S4	O	Internal standards (IS)				
		Were IS area counts and retention times within the method-required QC limits?	X			
S5	OI	Raw data (NELAC Section 5.5.10)				
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X			
		Were data associated with manual integrations flagged on the raw data?	X			
S6	O	Dual column confirmation				
		Did dual column confirmation results meet the method-required QC?			X	
S7	O	Tentatively identified compounds (TICs):				
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X	
S8	I	Interference Check Sample (ICS) results				
		Were percent recoveries within method QC limits?			X	
S9	I	Serial dilutions, post digestion spikes, and method of standard additions				
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			X	
S10	OI	Method detection limit (MDL) studies				
		Was a MDL study performed for each reported analyte?	X			
		Is the MDL either adjusted or supported by the analysis of DCSs?	X			5
S11	OI	Proficiency test reports				
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X			
S12	OI	Standards documentation				
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate source?	X			
S13	OI	Compound/analyte identification procedures				
		Are the procedures for compound/analyte identification documented?	X			
S14	OI	Demonstration of analyst competency (DOC)				
		Was DOC conducted consistent with NELAC Chapter 5?	X			
		Is documentation of the analyst's competency up-to-date and on file?	X			
S15	OI	Verification/validation documentation for methods (NELAC Chapter 5)				
		Are all the methods used to generate the data documented, verified, and validated, where applicable?	X			
S16	OI	Laboratory standard operating procedures (SOPs)				
		Are laboratory SOPs current and on file for each method performed?	X			

LABORATORY REVIEW CHECKLIST (continued): Exception Reports			
Laboratory Name:		Accutest Gulf Coast	LRC Date:
Project Name:		Quarterly Well Sampling, Parker	Laboratory Project Number:
Reviewer Name:		Anita Patel	Prep Batch Number(s):
			GSS178, VZ3732
ER# ¹	Description		
1	For reporting purposes, the MQL is defined in the report as the RL. The unadjusted MQL/RL is reported in the method blank. The SDL is defined in the report as the MDL.		
2	For reporting purposes, the method blank represents the unadjusted MQL. The DCS is on file in the laboratory and is not included in the laboratory data package.		
3	The laboratory is NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices, and methods associated with this laboratory data package for analytes that are listed in the Texas Fields of Accreditation.		
4	All anomalies are discussed in the case narrative.		
5	The Laboratory does not perform DCS analysis for Method RSKSOP-147/175. The components reported are not listed or do not have values in the Texas TRRP PCL tables.		

1ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked on

GC/MS Volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries



Method Blank Summary

Page 1 of 1

Job Number: TC14973

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VZ3732-MB	Z028313.D	1	08/24/12	AK	n/a	n/a	VZ3732

The QC reported here applies to the following samples:

Method: SW846 8260B

TC14973-1

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.25	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.25	ug/l	
108-88-3	Toluene	ND	1.0	0.26	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.71	ug/l	

CAS No.	Surrogate Recoveries	Limits
1868-53-7	Dibromofluoromethane	106% 79-122%
17060-07-0	1,2-Dichloroethane-D4	98% 75-121%
2037-26-5	Toluene-D8	106% 87-119%
460-00-4	4-Bromofluorobenzene	114% 80-133%

6.1.1

6

Blank Spike Summary

Page 1 of 1

Job Number: TC14973

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VZ3732-BS	Z028311.D	1	08/24/12	AK	n/a	n/a	VZ3732

The QC reported here applies to the following samples:

Method: SW846 8260B

TC14973-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2	Benzene	25	23.5	94	76-118
100-41-4	Ethylbenzene	25	23.6	94	75-112
108-88-3	Toluene	25	23.2	93	77-114
1330-20-7	Xylene (total)	75	70.6	94	75-111

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	99%	79-122%
17060-07-0	1,2-Dichloroethane-D4	90%	75-121%
2037-26-5	Toluene-D8	103%	87-119%
460-00-4	4-Bromofluorobenzene	109%	80-133%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: TC14973

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC14970-IMS	Z028320.D	1	08/24/12	AK	n/a	n/a	VZ3732
TC14970-IMSD	Z028321.D	1	08/24/12	AK	n/a	n/a	VZ3732
TC14970-1	Z028319.D	1	08/24/12	AK	n/a	n/a	VZ3732

The QC reported here applies to the following samples:

Method: SW846 8260B

TC14973-1

CAS No.	Compound	TC14970-1 ug/l	Q	Spike ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	1.0 U		25	24.5	98	24.2	97	1	76-118/16
100-41-4	Ethylbenzene	1.0 U		25	24.7	99	23.7	95	4	75-112/12
108-88-3	Toluene	1.0 U		25	24.4	98	24.1	96	1	77-114/12
1330-20-7	Xylene (total)	3.0 U		75	74.1	99	72.6	97	2	75-111/12

CAS No.	Surrogate Recoveries	MS	MSD	TC14970-1	Limits
1868-53-7	Dibromofluoromethane	107%	106%	104%	79-122%
17060-07-0	1,2-Dichloroethane-D4	94%	93%	96%	75-121%
2037-26-5	Toluene-D8	107%	107%	107%	87-119%
460-00-4	4-Bromofluorobenzene	113%	113%	113%	80-133%

* = Outside of Control Limits.

GC Volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Page 1 of 1

Job Number: TC14973

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GSS178-MB	SS003617.D	1	08/27/12	LT	n/a	n/a	GSS178

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC14973-1

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	ND	0.50	0.30	ug/l	
74-85-1	Ethene	ND	1.0	0.50	ug/l	
74-84-0	Ethane	ND	1.0	0.50	ug/l	
74-98-6	Propane	ND	1.5	0.75	ug/l	
75-28-5	Isobutane	ND	1.5	0.75	ug/l	
106-97-8	Butane	ND	1.5	0.75	ug/l	

7.1.1

7

Blank Spike Summary

Page 1 of 1

Job Number: TC14973

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GSS178-BS	SS003615.D	1	08/27/12	LT	n/a	n/a	GSS178

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC14973-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
74-82-8	Methane	21.5	20.8	97	70-130
74-85-1	Ethene	57.4	58.2	101	70-130
74-84-0	Ethane	43.3	41.8	97	70-130
74-98-6	Propane	60.6	56.5	93	70-130
75-28-5	Isobutane	72.5	71.1	98	70-130
106-97-8	Butane	76.6	73.7	96	70-130

* = Outside of Control Limits.

Matrix Spike Summary

Page 1 of 1

Job Number: TC14973

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC14970-1MS	SS003620.D	1	08/27/12	LT	n/a	n/a	GSS178
TC14970-1	SS003618.D	1	08/27/12	LT	n/a	n/a	GSS178
TC14970-1	SS003621.D	10	08/27/12	LT	n/a	n/a	GSS178

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC14973-1

CAS No.	Compound	TC14970-1 ug/l	Q	Spike ug/l	MS ug/l	MS %	Limits
74-82-8	Methane	914 ^b		21.5	600	-337* ^a	60-140
74-85-1	Ethene	1.0 U		57.4	58.8	102	60-140
74-84-0	Ethane	42.3		43.3	71.7	68	60-140
74-98-6	Propane	1.5 U		60.6	56.4	93	60-140
75-28-5	Isobutane	1.5 U		72.5	70.6	97	60-140
106-97-8	Butane	1.5 U		76.6	74.0	97	60-140

(a) Outside control limits due to high level in sample relative to spike amount.

(b) Result is from Run #2.

* = Outside of Control Limits.

Duplicate Summary

Page 1 of 1

Job Number: TC14973

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC14970-1DUP	SS003619.D	1	08/27/12	LT	n/a	n/a	GSS178
TC14970-1	SS003618.D	1	08/27/12	LT	n/a	n/a	GSS178
TC14970-1	SS003621.D	10	08/27/12	LT	n/a	n/a	GSS178

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC14973-1

CAS No.	Compound	TC14970-1 ug/l	DUP Q ug/l	Q	RPD	Limits
74-82-8	Methane	914 ^a	869	E	26	30
74-85-1	Ethene	1.0 U	ND		nc	30
74-84-0	Ethane	42.3	57.4		30	30
74-98-6	Propane	1.5 U	ND		nc	30
75-28-5	Isobutane	1.5 U	ND		nc	30
106-97-8	Butane	1.5 U	ND		nc	30

(a) Result is from Run #2.

* = Outside of Control Limits.

Lab #: 261135 Job #: 19036
 Sample Name/Number: WW01-WEL-081712
 Company: Oil Tracers, LLC
 Date Sampled: 8/17/2012
 Container: Dissolved Gas Bottle
 Field/Site Name: Second Quarter Well Sampling
 Location: Parker County, TX
 Formation/Depth:
 Sampling Point:
 Date Received: 8/22/2012 Date Reported: 9/11/2012

Component	Chemical mol. %	$\delta^{13}\text{C}$ ‰	δD ‰	$\delta^{18}\text{O}$ ‰
Carbon Monoxide -----	nd			
Hydrogen Sulfide -----	na			
Helium -----	na			
Hydrogen -----	nd			
Argon -----	1.44			
Oxygen -----	0.029			
Nitrogen -----	80.01			
Carbon Dioxide -----	0.30			
Methane -----	17.70	-46.00	-174.9	
Ethane -----	0.518	-20.3		
Ethylene -----	nd			
Propane -----	nd			
Propylene -----	nd			
Iso-butane -----	nd			
N-butane -----	0.0004			
Iso-pentane -----	0.0004			
N-pentane -----	nd			
Hexanes + -----	nd			

Total BTU/cu.ft. dry @ 60deg F & 14.73psia, calculated: 188

Specific gravity, calculated: 0.902

Remarks:

Analysis is of gas extracted from water by headspace equilibration. Analysis has been corrected for helium added to create headspace. Helium dilution factor = 0.72

*Addition of helium negates the ability to detect native helium and may negate the ability to detect hydrogen.

** Ethane isotopes obtained online via GC-C-IRMS

nd = not detected. na = not analyzed. Isotopic composition of hydrogen is relative to VSMOW. Isotopic composition of carbon is relative to VPDB. Isotopic composition of oxygen is relative to VSMOW, except for carbon dioxide which is relative to VPDB. Calculations for BTU and specific gravity per ASTM D3588. Chemical compositions are normalized to 100%. Mol. % is approximately equal to vol. %.



08/31/12

Technical Report for

EarthCon Consultants

Quarterly Well Sampling, Parker County, Texas

2nd Quarter / WW19-WIL

Accutest Job Number: TC14962

Sampling Date: 08/19/12

Report to:

EarthCon Consultants
4800 Sugar Grove Suite 420
Stafford, TX 77477
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mcpatton@rangeresources.com; escott@earthcon.com
ATTN: Gabriela Floreslovo

Total number of pages in report: 25



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.


Richard Rodriguez
Laboratory Director

Client Service contact: Elessa Sommers 713-271-4700

Certifications: TX (T104704220-12-8) AR (11-028-0) AZ (AZ0769) FL (E87628) KS (E-10366)
LA (85695/04004) OK (211-035)

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Test results relate only to samples analyzed.

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Sample Summary

EarthCon Consultants

Job No: TC14962

Quarterly Well Sampling, Parker County, Texas
Project No: 2nd Quarter / WW19-WIL

Sample Number	Collected Date	Time By	Received	Matrix Code Type	Client Sample ID
TC14962-1	08/19/12	14:10	08/21/12	AQ Ground Water	WW19-WIL-081912



SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: EarthCon Consultants

Job No TC14962

Site: Quarterly Well Sampling, Parker County, Texas

Report Date 8/31/2012 6:47:47 PM

1 Sample was collected on 08/19/2012 and received intact at Accutest on 08/21/2012 and properly preserved in 1 cooler at 1.9 Deg C. The sample received an Accutest job number of TC14962. A listing of the Laboratory Sample ID, Client Sample ID and date of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

Volatiles by GCMS By Method SW846 8260B

Matrix AQ	Batch ID: VK449
------------------	------------------------

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC14974-3MS, TC14974-3MSD were used as the QC samples indicated.

Volatiles by GC By Method RSKSOP-147/175

Matrix AQ	Batch ID: GSS178
------------------	-------------------------

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TC14970-1DUP, TC14970-1MS were used as the QC samples indicated.
- Matrix Spike Recovery for Methane is outside control limits. Outside control limits due to high level in sample relative to spike amount.

Accutest Laboratories Gulf Coast (ALGC) certifies that this report meets the project requirements for analytical data produced for the samples as received at ALGC and as stated on the COC. ALGC certifies that the data meets the Data Quality Objectives for precision, accuracy and completeness as specified in the ALGC Quality Manual except as noted above. This report is to be used in its entirety. ALGC is not responsible for any assumptions of data quality if partial data packages are used

Summary of Hits

Page 1 of 1

Job Number: TC14962

Account: EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Collected: 08/19/12



Lab Sample ID Analyte	Client Sample ID	Result/ Qual	ML	SDL	Units	Method
TC14962-1	WW19-WIL-081912					
Methane		1.98	0.0050	0.0030	mg/l	RSKSOP-147/175
Ethane		0.136	0.0010	0.00050	mg/l	RSKSOP-147/175



Sample Results

Report of Analysis

Report of Analysis

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Client Sample ID:	WW19-WIL-081912	Date Sampled:	08/19/12
Lab Sample ID:	TC14962-1	Date Received:	08/21/12
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260B		
Project:	Quarterly Well Sampling, Parker County, Texas		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	K10046.D	1	08/23/12	EM	n/a	n/a	VK449
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

Purgeable Aromatics

CAS No.	Compound	Result	MQL	SDL	Units	Q
71-43-2	Benzene	0.00025 U	0.0010	0.00025	mg/l	
108-88-3	Toluene	0.00026 U	0.0010	0.00026	mg/l	
100-41-4	Ethylbenzene	0.00025 U	0.0010	0.00025	mg/l	
1330-20-7	Xylene (total)	0.00071 U	0.0030	0.00071	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	99%		79-122%
17060-07-0	1,2-Dichloroethane-D4	94%		75-121%
2037-26-5	Toluene-D8	103%		87-119%
460-00-4	4-Bromofluorobenzene	123%		80-133%

U = Not detected SDL - Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Page 1 of 1

Client Sample ID: WW19-WIL-081912

Lab Sample ID: TC14962-1

Matrix: AQ - Ground Water

Method: RSKSOP-147/175

Project: Quarterly Well Sampling, Parker County, Texas

Date Sampled: 08/19/12

Date Received: 08/21/12

Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	SS003626.D	1	08/27/12	LT	n/a	n/a	GSS178
Run #2	SS003628.D	10	08/27/12	LT	n/a	n/a	GSS178

RSK147 Special List

CAS No.	Compound	Result	MQL	SDL	Units	Q
74-82-8	Methane	1.98 ^a	0.0050	0.0030	mg/l	
74-85-1	Ethene	0.00050 U	0.0010	0.00050	mg/l	
74-84-0	Ethane	0.136	0.0010	0.00050	mg/l	
74-98-6	Propane	0.00075 U	0.0015	0.00075	mg/l	
75-28-5	Isobutane	0.00075 U	0.0015	0.00075	mg/l	
106-97-8	Butane	0.00075 U	0.0015	0.00075	mg/l	

(a) Result is from Run# 2

U = Not detected SDL - Sample Detection Limit
MQL = Method Quantitation Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Misc. Forms

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Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody
- LRC Form



CHAIN OF CUSTODY

PAGE ___ OF ___

10165 Harwin Dr. Ste 150 Houston, TX 77036
TEL 713-271-4700 FAX: 713-271-4770
www.acctest.com

FED-EX Tracking #		Butte Order Control #	
Accutest Quote #		Accutest Job # TC14962	
Client / Reporting Information		Project Information	
Company Name EarthCon Consultants, Inc. Street Address 4800 Sugar Grove Blvd., Suite 390 City State Zip Stafford TX 77477 Project Contact Gabriela Floreslovo Phone # Fax # 281-201-3513 Sampler(s) Name(s) JULIE HELFRICH (512)632-5380		Project Name: Second Quarterly Well Sampling, Parker County, Texas Street Billing Information (if different from Report to) Company Name Street Address City State Zip Client Purchase Order # Project Manager Attention:	
Requested Analyses		Matrix Codes	
DW - Drinking Water GW - Ground Water WW - Water SW - Surface Water SO - Soil SL - Sludge SED - Sediment CI - Oil LIQ - Other Liquid AIR - Air SOL - Other Solid WP - Wipe FB - Field Blank		LAB USE ONLY	
Collection		Number of preserved bottles	
Field ID / Point of Collection WW19-W11-081912 Date 08/19/12 Time 14:10 Sampled By JLH Matrix W # of bottles 6		HCl NO3H ZnSO4 HNO3 H2SO4 NONE DI Water MCH TSP H2SO4 ENCORE OTHER	
Turnaround Time (Business days)		Data Deliverable Information	
<input checked="" type="checkbox"/> Standard <input type="checkbox"/> 5 Day RUSH <input type="checkbox"/> 4 Day RUSH <input type="checkbox"/> 3 Day RUSH <input type="checkbox"/> 2 Day RUSH <input type="checkbox"/> 1 Day EMERGENCY Emergency & Rush T/A data available VIA Lablink		<input type="checkbox"/> Commercial "A" (Level 1) <input type="checkbox"/> Commercial "B" (Level 2) <input type="checkbox"/> FULLT (Level 3+4) <input type="checkbox"/> REDT1 (Level 3+4) <input type="checkbox"/> Commercial "C" <input checked="" type="checkbox"/> TRRP <input type="checkbox"/> EDD Format <input type="checkbox"/> Other	
Approved By (Accutest PM): / Date:		Comments / Special Instructions	
Sample Custody must be documented below each time samples change possession, including courier delivery.			
Relinquished by: Julie Helfrich Date Time: 8/19/12 16:15 Relinquished by Sample: [Signature] Date Time: 8/21/12 8:00 Relinquished by: [Signature] Date Time: [Signature]		Received By: [Signature] Date Time: 8/19/12 Received By: [Signature] Date Time: 8/16/12 Received By: [Signature] Date Time: [Signature]	
Custody Seal #		Intact Not Intact	
Preserved where applicable		On Ice Cooler Temp.	

TC14962: Chain of Custody

Page 1 of 3

Accutest Job Number: TC14962 Client: EARTHCON CONSULTANTS Project: 2ND QUARTERLY
 Date / Time Received: 8/21/2012 Delivery Method: FedEx Airbill #'s: 801561645028
 No. Coolers: 1 Therm ID: IRGUN5 Temp Adjustment Factor: -0.4;
 Cooler Temps (Initial/Adjusted): #1: (2.3/1.9);

Cooler Security
Y or N

1. Custody Seals Present: ☒ ☐
 2. Custody Seals Intact: ☒ ☐

Y or N

3. COC Present: ☒ ☐
 4. Smpl Dates/Time OK: ☒ ☐

Cooler Temperature
Y or N

1. Temp criteria achieved: ☒ ☐
 2. Cooler temp verification: _____
 3. Cooler media: Ice (Bag)

Quality Control Preservation
Y or N
N/A
WTB STB

1. Trip Blank present / cooler: ☒ ☐ ☐ ☒ ☐
 2. Trip Blank listed on COC: ☐ ☒ ☐
 3. Samples preserved properly: ☒ ☐
 4. VOCs headspace free: ☒ ☐ ☐

Sample Integrity - Documentation
Y or N

1. Sample labels present on bottles: ☒ ☐
 2. Container labeling complete: ☒ ☐
 3. Sample container label / COC agree: ☒ ☐

Sample Integrity - Condition
Y or N

1. Sample recvd within HT: ☒ ☐
 2. All containers accounted for: ☒ ☐
 3. Condition of sample: Intact

Sample Integrity - Instructions
Y or N N/A

1. Analysis requested is clear: ☒ ☐
 2. Bottles received for unspecified tests: ☐ ☒
 3. Sufficient volume recvd for analysis: ☒ ☐
 4. Compositing instructions clear: ☐ ☐ ☒
 5. Filtering instructions clear: ☐ ☐ ☒

Comments

 5.1
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TC14962: Chain of Custody
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Sample Receipt Log

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Job #: TC13879

Date / Time Received: 8/2/2012 9:50:00 AM

Initials: BG

Client: SPECTRA ENERGY

Cooler #	Sample ID:	Vol	Bot #	Location	Pres	pH	Therm ID	Initial Temp	Therm CF	Corrected Temp
1	TC13879-1	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-1	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-2	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-2	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-3	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-3	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-4	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-4	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-5	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-5	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-6	4oz	1	SUB	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1
1	TC13879-6	4oz	2	2-90	N/P	Note #2 - Preservative check not applicable.	IRGUN5	24.5	-0.4	24.1

 5.1
 5

TC14962: Chain of Custody
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Appendix A Laboratory Data Package Cover Page

TC14962 This data package consists of

- ☐ This signature page, the laboratory review checklist, and the following reportable data:
- ☐ R1 Field chain-of-custody documentation;
- ☐ R2 Sample identification cross-reference;
- ☐ R3 Test reports (analytical data sheets) for each environmental sample that includes:
 - a) Items consistent with NELAC 5.13 or ISO/IEC 17025 Section 5.10
 - b) dilution factors,
 - c) preparation methods,
 - d) cleanup methods, and
 - e) if required for the project, tentatively identified compounds (TICs).
- ☐ R4 Surrogate recovery data including:
 - a) Calculated recovery (%R), and
 - b) The laboratory's surrogate QC limits.
- ☐ R5 Test reports/summary forms for blank samples;
- ☐ R6 Test reports/summary forms for laboratory control samples (LCSs) including:
 - a) LCS spiking amounts,
 - b) Calculated %R for each analyte, and
 - c) The laboratory's LCS QC limits.
- ☐ R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
 - a) Samples associated with the MS/MSD clearly identified,
 - b) MS/MSD spiking amounts,
 - c) Concentration of each MS/MSD analyte measured in the parent and
 - d) Calculated %Rs and relative percent differences (RPDs), and
 - e) The laboratory's MS/MSD QC limits
- ☐ R8 Laboratory analytical duplicate (if applicable) recovery and precision:
 - a) The amount of analyte measured in the duplicate,
 - b) The calculated RPD, and
 - c) The laboratory's QC limits for analytical duplicates.
- ☐ R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each
- ☐ R10 Other problems or anomalies.

The Exception Report for each "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Report. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratory in the Laboratory Review Checklist, and no information or data have been knowingly withheld.

Check, if applicable: This laboratory meets an exception under 30 TAC&25.6 and was last inspection by

☐ [X] TCEQ or ☐ _____ on April 2011. Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

QA Manager

Name (Printed)

Signature

Official Title (printed)

Date

Richard Rodriguez



Laboratory Director

8/29/2012

LABORATORY REVIEW CHECKLIST: REPORTABLE DATA									
Laboratory Name:		Accutest Gulf Coast		LRC Date:		8/29/2012			
Project Name:		Quarterly Well Sampling, Parker County, Texas		Laboratory Project Number:		TC14962			
Reviewer Name:		Anita Patel		Prep Batch Number(s):		GSS178, VK449			
# ¹	A ²	DESCRIPTION				YES	NO	NA ³	NR ⁴ ER # ⁵
R1	OI	CHAIN-OF-CUSTODY (C-O-C):							
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?				X			
		Were all departures from standard conditions described in an exception report?				X			
R2	OI	Sample and quality control (QC) identification							
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?				X			
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?				X			
R3	OI	Test reports							
		Were samples prepared and analyzed within holding times?				X			
		Other than those results <MQL, were all other raw values bracketed by calibration standards?				X			
		Were calculations checked by a peer or supervisor?				X			
		Were all analyte identifications checked by a peer or supervisor?				X			
		Were sample detection limits reported for all analytes not detected?				X			
		Were all results for soil and sediment samples reported on a dry weight basis?						X	
		Were % moisture (or solids) reported for all soil and sediment samples?						X	
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW846 Method 5035?						X	
		If required for the project, are TIC's reported?						X	
R4	O	Surrogate recovery data							
		Were surrogates added prior to extraction?				X			
		Were surrogate percent recoveries in all samples within the laboratory QC limits?				X			
R5	OI	Test reports/summary forms for blank samples							
		Were appropriate type(s) of blanks analyzed?				X			
		Were blanks analyzed at the appropriate frequency?				X			
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?				X			
		Were blank concentrations <MQL?				X			
R6	OI	Laboratory control samples (LCS):							
		Were all COCs included in the LCS?				X			
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?				X			
		Were LCSs analyzed at required frequency?				X			
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?				X			
		Does the detectability check sample data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?				X			5
		Was the LCSD RPD within QC limits?						X	
R7	OI	Matrix spike (MS) and matrix spike duplicate (MSD) data							
		Were the project/method specified analytes included in the MS and MSD?				X			
		Were MS/MSD analyzed at the appropriate frequency?				X			
		Were MS (and MSD, if applicable) %Rs within the laboratory QC Limits?					X		4
		Were the MS/MSD RPDs within laboratory QC limits?				X			
R8	OI	Analytical duplicate data							
		Were appropriate analytical duplicates analyzed for each matrix?				X			
		Were analytical duplicates analyzed at the appropriate frequency?				X			
		Were RPDs or relative standard deviations within the laboratory QC limits?				X			
R9	OI	Method quantitation limits (MQLs):							
		Are the MQLs for each method analyte included in the laboratory data package?				X			
		Do the MQLs correspond to the concentration of the lowest non-zero calibration?				X			
		Are unadjusted MQLs and DCSs included in the laboratory data package?					X		2
R10	OI	Other problems/anomalies							
		Are all known problems/anomalies/special conditions noted in this LRC and ER?				X			
		Was applicable and available technology used to lower the SDL to minimize the				X			
		Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices, and methods associated with this laboratory data package?				X			3

Laboratory Name:		Accutest Gulf Coast	LRC Date:		8/29/2012	
Project Name:		Quarterly Well Sampling, Parker	Laboratory Project Number:		TC14962	
Reviewer Name:		Anita Patel	Prep Batch Number(s):		GSS178, VK449	
#	A ²	DESCRIPTION	YES	NO	NA ³	NR ⁴ ER # ⁵
S1	OI	Initial calibration (ICAL)				
		Were response factors and/or relative response factors for each analyte within QC limits?	X			
		Were percent RSDs or correlation coefficient criteria met?	X			
		Was the number of standards recommended in the method used for all analytes?	X			
		Were all points generated between the lowest and highest standard used to calculate the curve?	X			
		Are ICAL data available for all instruments used?	X			
		Has the initial calibration curve been verified using an appropriate second source standard?	X			
S2	OI	Initial and continuing calibration verification (ICCV AND CCV) and continuing				
		Was the CCV analyzed at the method-required frequency?	X			
		Were percent differences for each analyte within the method-required QC limits?	X			
		Was the ICAL curve verified for each analyte?	X			
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?			X	
S3	O	Mass spectral tuning				
		Was the appropriate compound for the method used for tuning?	X			
		Were ion abundance data within the method-required QC limits?	X			
S4	O	Internal standards (IS)				
		Were IS area counts and retention times within the method-required QC limits?	X			
S5	OI	Raw data (NELAC Section 5.5.10)				
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X			
		Were data associated with manual integrations flagged on the raw data?	X			
S6	O	Dual column confirmation				
		Did dual column confirmation results meet the method-required QC?			X	
S7	O	Tentatively identified compounds (TICs):				
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X	
S8	I	Interference Check Sample (ICS) results				
		Were percent recoveries within method QC limits?			X	
S9	I	Serial dilutions, post digestion spikes, and method of standard additions				
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			X	
S10	OI	Method detection limit (MDL) studies				
		Was a MDL study performed for each reported analyte?	X			
		Is the MDL either adjusted or supported by the analysis of DCSs?	X			5
S11	OI	Proficiency test reports				
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X			
S12	OI	Standards documentation				
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate source?	X			
S13	OI	Compound/analyte identification procedures				
		Are the procedures for compound/analyte identification documented?	X			
S14	OI	Demonstration of analyst competency (DOC)				
		Was DOC conducted consistent with NELAC Chapter 5?	X			
		Is documentation of the analyst's competency up-to-date and on file?	X			
S15	OI	Verification/validation documentation for methods (NELAC Chapter 5)				
		Are all the methods used to generate the data documented, verified, and validated, where applicable?	X			
S16	OI	Laboratory standard operating procedures (SOPs)				
		Are laboratory SOPs current and on file for each method performed?	X			

LABORATORY REVIEW CHECKLIST (continued): Exception Reports			
Laboratory Name:	Accutest Gulf Coast	LRC Date:	8/29/2012
Project Name:	Quarterly Well Sampling, Parker	Laboratory Project Number:	TC14962
Reviewer Name:	Anita Patel	Prep Batch Number(s):	GSS178, VK449
ER#	Description		
1	For reporting purposes, the MQL is defined in the report as the RL. The unadjusted MQL/RL is reported in the method blank. The SDL is defined in the report as the MDL.		
2	For reporting purposes, the method blank represents the unadjusted MQL. The DCS is on file in the laboratory and is not included in the laboratory data package.		
3	The laboratory is NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices, and methods associated with this laboratory data package for analytes that are listed in the Texas Fields of Accreditation.		
4	All anomalies are discussed in the case narrative.		
5	The Laboratory does not perform DCS analysis for Method RSKSOP-147/175. The components reported are not listed or do not have values in the Texas TRRP PCL tables.		

1ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked on

5.2
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GC/MS Volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries



Method Blank Summary

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Job Number: TC14962

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VK449-MB	K10026.D	1	08/23/12	EM	n/a	n/a	VK449

The QC reported here applies to the following samples:

Method: SW846 8260B

TC14962-1

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.25	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.25	ug/l	
108-88-3	Toluene	ND	1.0	0.26	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.71	ug/l	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	101%	79-122%
17060-07-0	1,2-Dichloroethane-D4	96%	75-121%
2037-26-5	Toluene-D8	102%	87-119%
460-00-4	4-Bromofluorobenzene	123%	80-133%

6.1.1

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Blank Spike Summary

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Job Number: TC14962

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VK449-BS	K10024.D	1	08/23/12	EM	n/a	n/a	VK449

The QC reported here applies to the following samples:

Method: SW846 8260B

TC14962-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2	Benzene	25	24.2	97	76-118
100-41-4	Ethylbenzene	25	25.2	101	75-112
108-88-3	Toluene	25	25.0	100	77-114
1330-20-7	Xylene (total)	75	76.6	102	75-111

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	99%	79-122%
17060-07-0	1,2-Dichloroethane-D4	95%	75-121%
2037-26-5	Toluene-D8	103%	87-119%
460-00-4	4-Bromofluorobenzene	123%	80-133%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: TC14962

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC14974-3MS	K10030.D	1	08/23/12	EM	n/a	n/a	VK449
TC14974-3MSD	K10031.D	1	08/23/12	EM	n/a	n/a	VK449
TC14974-3 ^a	K10029.D	1	08/23/12	EM	n/a	n/a	VK449

The QC reported here applies to the following samples:

Method: SW846 8260B

TC14962-1

CAS No.	Compound	TC14974-3 ug/l	Spike Q	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	1.0 U	25	24.1	96	23.3	93	3	76-118/16
100-41-4	Ethylbenzene	1.0 U	25	25.1	100	24.2	97	4	75-112/12
108-88-3	Toluene	1.0 U	25	24.8	99	23.8	95	4	77-114/12
1330-20-7	Xylene (total)	3.0 U	75	74.8	100	73.2	98	2	75-111/12

CAS No.	Surrogate Recoveries	MS	MSD	TC14974-3	Limits
1868-53-7	Dibromofluoromethane	99%	99%	100%	79-122%
17060-07-0	1,2-Dichloroethane-D4	96%	95%	96%	75-121%
2037-26-5	Toluene-D8	103%	102%	102%	87-119%
460-00-4	4-Bromofluorobenzene	122%	122%	121%	80-133%

(a) Sample was not preserved to a pH < 2

* = Outside of Control Limits.

GC Volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

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Method Blank Summary

Page 1 of 1

Job Number: TC14962

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GSS178-MB	SS003617.D	1	08/27/12	LT	n/a	n/a	GSS178

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC14962-1

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	ND	0.50	0.30	ug/l	
74-85-1	Ethene	ND	1.0	0.50	ug/l	
74-84-0	Ethane	ND	1.0	0.50	ug/l	
74-98-6	Propane	ND	1.5	0.75	ug/l	
75-28-5	Isobutane	ND	1.5	0.75	ug/l	
106-97-8	Butane	ND	1.5	0.75	ug/l	

7.1.1

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Blank Spike Summary

Page 1 of 1

Job Number: TC14962

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GSS178-BS	SS003615.D	1	08/27/12	LT	n/a	n/a	GSS178

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC14962-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
74-82-8	Methane	21.5	20.8	97	70-130
74-85-1	Ethene	57.4	58.2	101	70-130
74-84-0	Ethane	43.3	41.8	97	70-130
74-98-6	Propane	60.6	56.5	93	70-130
75-28-5	Isobutane	72.5	71.1	98	70-130
106-97-8	Butane	76.6	73.7	96	70-130

* = Outside of Control Limits.

Matrix Spike Summary

Page 1 of 1

Job Number: TC14962

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC14970-1MS	SS003620.D	1	08/27/12	LT	n/a	n/a	GSS178
TC14970-1	SS003618.D	1	08/27/12	LT	n/a	n/a	GSS178
TC14970-1	SS003621.D	10	08/27/12	LT	n/a	n/a	GSS178

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC14962-1

CAS No.	Compound	TC14970-1 ug/l	Spike Q	MS ug/l	MS %	Limits
74-82-8	Methane	914 ^b	21.5	600	-337* ^a	60-140
74-85-1	Ethene	1.0 U	57.4	58.8	102	60-140
74-84-0	Ethane	42.3	43.3	71.7	68	60-140
74-98-6	Propane	1.5 U	60.6	56.4	93	60-140
75-28-5	Isobutane	1.5 U	72.5	70.6	97	60-140
106-97-8	Butane	1.5 U	76.6	74.0	97	60-140

(a) Outside control limits due to high level in sample relative to spike amount.

(b) Result is from Run #2.

* = Outside of Control Limits.

Duplicate Summary

Page 1 of 1

Job Number: TC14962

Account: PESTXST EarthCon Consultants

Project: Quarterly Well Sampling, Parker County, Texas

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TC14970-1DUP	SS003619.D	1	08/27/12	LT	n/a	n/a	GSS178
TC14970-1	SS003618.D	1	08/27/12	LT	n/a	n/a	GSS178
TC14970-1	SS003621.D	10	08/27/12	LT	n/a	n/a	GSS178

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

TC14962-1

CAS No.	Compound	TC14970-1 ug/l	DUP Q ug/l	Q	RPD	Limits
74-82-8	Methane	914 ^a	869	E	26	30
74-85-1	Ethene	1.0 U	ND		nc	30
74-84-0	Ethane	42.3	57.4		30	30
74-98-6	Propane	1.5 U	ND		nc	30
75-28-5	Isobutane	1.5 U	ND		nc	30
106-97-8	Butane	1.5 U	ND		nc	30

(a) Result is from Run #2.

* = Outside of Control Limits.

Lab #: 261148 Job #: 19036
 Sample Name/Number: WW19-WIL-081912
 Company: Oil Tracers, LLC
 Date Sampled: 8/19/2012
 Container: Dissolved Gas Bottle
 Field/Site Name: Second Quarter Well Sampling
 Location: Parker County, TX
 Formation/Depth:
 Sampling Point:
 Date Received: 8/22/2012 Date Reported: 9/11/2012

Component	Chemical mol. %	$\delta^{13}\text{C}$ ‰	δD ‰	$\delta^{18}\text{O}$ ‰
Carbon Monoxide -----	nd			
Hydrogen Sulfide -----	na			
Helium -----	na			
Hydrogen -----	nd			
Argon -----	1.16			
Oxygen -----	0.12			
Nitrogen -----	69.30			
Carbon Dioxide -----	0.27			
Methane -----	28.38	-43.73	-119.0	
Ethane -----	0.766	-20.9		
Ethylene -----	nd			
Propane -----	0.0008			
Propylene -----	nd			
Iso-butane -----	nd			
N-butane -----	0.0008			
Iso-pentane -----	0.0004			
N-pentane -----	nd			
Hexanes + -----	0.0004			

Total BTU/cu.ft. dry @ 60deg F & 14.73psia, calculated: 301

Specific gravity, calculated: 0.857

Remarks:

Analysis is of gas extracted from water by headspace equilibration. Analysis has been corrected for helium added to create headspace. Helium dilution factor = 0.74

*Addition of helium negates the ability to detect native helium and may negate the ability to detect hydrogen.

** Ethane isotopes obtained online via GC-C-IRMS

nd = not detected. na = not analyzed. Isotopic composition of hydrogen is relative to VSMOW. Isotopic composition of carbon is relative to VPDB. Isotopic composition of oxygen is relative to VSMOW, except for carbon dioxide which is relative to VPDB. Calculations for BTU and specific gravity per ASTM D3588. Chemical compositions are normalized to 100%. Mol. % is approximately equal to vol. %.